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THE MALLOPHAGA
OF
NEW ENGLAND BIRDS

By

JAMES E. KEIRANS

~~Also~~
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THE MALLOPHAGA OF NEW ENGLAND BIRDS[1, 2]

by

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[1]This paper is based on a thesis submitted to the faculty of the Graduate School of the University of New Hampshire in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

[2]Published with the approval of the Director of the New Hampshire Agricultural Experiment Station as Station Bulletin 492.

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INTRODUCTION

The first mention of Mallophaga in the United States seems to have been by Dr. W. I. Burnett (1852) in an abstract of a paper, on the external parasites of warm-blooded animals, presented before the Boston Society of Natural History. He stated:

> .....that although there are single species peculiar to particular animals, there are others which are found in different species of the same genus, as is the case in the parasites living on birds of the genus *Larus* (Gulls) and the diurnal birds of prey.

The first species of Mallophaga determined in the United States from a North American bird was *Docophorus buteonis*, (now *Craspedorrhynchus*), by A. S. Packard, Jr. from *Buteo lineatus* (Gmelin) in the year 1870. In the same paper he described *Philopterus hæmatus* (Packard) and *Ricinus thoracicus* (Packard) both from *Plectophenax nivalis* (Linn.) and *Actornithophilus lari* (Packard) from *Larus marinus* Linn.

In 1878 Joseph Leidy, the famed parasitologist who identified *Trichinella spiralis* in hog muscle, described *Piagetiella perale* (Leidy) from *Pelecanus erythrorhynchos* Gemlin. It is interesting to note that this mallophagan is not one of the commonly found types of lice which feed on the feathers of its host, but one which lives inside the pouch of the pelican feeding on salivary secretions and blood.

Osborn in 1890 described *Saemundssonia phaëtona* from *Phaeton aethereus* Linn. and in 1891 he described *Geomydoecus geomydis* from the Plains Pocket Gopher, *Geomys bursarius* (Shaw).

However, the real beginnings of Mallophaga taxonomy in the United States began in 1896. In that year three indispensable publications appeared; New Mallophaga I and II, by Vernon L. Kellogg, and Insects Affecting Domestic Animals, by Herbert Osborn. Kellogg's work is the first large systematic treatment of the Mallophaga to appear in America. Part III of New Mallophaga appeared in 1899, along with the first extensive treatment of the anatomy of the Mallophaga by R. E. Snodgrass.

In the twentieth century, M. A. Carriker, Jr. (1902) published his first paper on Mallophaga and continued working, mainly on Neotropical species until his death in 1965. At the present time, the most active workers in this country are Edwards, Emerson, Price, Tuff, and Ward.

In an early publication, Peters (1928) listed 94 species of Mallophaga from 114 species of birds in Ohio. Three years later Geist (1931) added 21 additional species of Mallophaga. Peters (1936) published a list of bird ectoparasites from the states east of the Mississippi. The only acceptable state list of Mallophaga is from North Carolina (Brimley, 1938, Supplements, 1942, 1950).

The publications such as A Check List of the Genera and Species of Mallophaga by G. H. E. Hopkins and Theresa Clay (1952), British Museum

(Nat. Hist.), London, 362 pp., and the lists from North America, A Tentative List of Mallophaga for North American Birds (North of Mexico), by K. C. Emerson (1962), and A Checklist of the Mallophaga of North America (North of Mexico), Part I. Suborder Ischnocerna; Part II. Suborder Amblycera (1964), are very valuable for anyone working with these insects. These last two were published at Dugway Proving Ground, Dugway, Utah.

Since the earlier works are no longer readily available, and since others tend to be a list of birds rather than a list of Mallophaga (Johnson, 1931), the present work is intended to bring together the Mallophaga of a relatively small area into a readily usable form and to provide keys to the 64 genera represented and descriptions, where available, of the species.

SYSTEMATICS

Linnaeus in his Systema Naturae, X Editio, 1758, placed the Mallophaga in the order Aptera which also contained the classes Crustacea, Chilopoda and Diplopoda. In 1802 Latreille created the order Parasita in which he placed both the biting and sucking lice. Leach (1815) erected the order Anoplura and included in it two families, Pediculides and Nirmides. With the publication of Die Familien und Gattungen der Theirinsekten (Insecta epizoa); als ein Prodromus einer Naturgeschicht derselben by Nitzsch (1818), began the first systematic study of the Mallophaga. He described the new order Mallophaga to include those lice with mandibulate mouth parts. Latreille (1825), redefined the Parasita and divided it into two groups, the Mandibulata (chewing lice) and Siphunculata (sucking lice). Shipley (1904), gave the name Lipoptera to the Mallophaga but this name has not been accepted by modern workers. The rules of zoological nomenclature do not apply above the family level but the ordinal name Mallophaga Nitzsch has priority over all others used for this group and is now accepted by most American workers. Some entomologists, mostly European, combine the Mallophaga and Anoplura into the order Phthiraptera. Weber (1939) includes all lice in the order Phthiraptera and Clay (1957) considers the Mallophaga to be a suborder of the order Phthiraptera with the Amblycera and the Ischnocera considered as superfamilies.

It would seem that from a taxonomic and phylogenetic point of view, Weber's and Clay's opinions may be correct and that the order Phthiraptera may soon be accepted by all workers. However, I have not used their classification. I have held to the view of the majority of North American workers, since this paper has the purpose of serving as a guide to the New England Mallophaga. Almost the entire literature in this field is classified with Nitzsch's ordinal name and as a practical workable classification serves its purpose quite well. The Amblycera and Ischnocera are regarded as suborders with three families found on New England birds; Laemobothriidae, Menoponidae, and Ricinidae in the Amblycera and one, Philopteridae, in the Ischnocera.

METHODS AND MATERIAL

All birds were collected under permits granted by the Federal Government and the State of New Hampshire. Most of the larger birds were shot with a 20 gauge shotgun equipped with a poly-choke and equipped with a .410 adapter for some of the smaller birds. Sets of fine mist nets, (type A)[1], were used for collecting a great many of the passerine birds.

Birds were placed in a closed container, usually a pint or quart ice cream carton, containing a wad of chloroformed cotton and left for several minutes. The bird is then removed and shaken over a large sheet of white paper. Ruffing the feathers and running a blunt dissecting needle under the feathers and then out at right angles aids in dislodging the lice.

Another method for removing Mallophaga from their hosts is dusting with the silica aerogel, Dri-Die 67[2]. After mist-netting, the birds are placed in a plastic bag and dusted with a hand bulb duster. The bird and the plastic bag are put into a brown paper sack. The bird becomes quiet in the darkness. The bird is removed after 15 minutes and its feathers ruffed while it is still inside the plastic bag. The bird is released and the Mallophaga recovered from the plastic bag.

Dri-Die is an amorphous white powder which, when applied, absorbs the waxy layer of the cuticle and the resulting dehydration kills the Mallophaga. It has the added advantage of irritating the Mallophaga causing them to release their mandibles thus allowing them to drop off the bird.

The following procedure was used in making permanent slide mounts of the Mallophaga collected during the course of this study. A small incision was made along an intersegmental membrane as far forward on the abdomen as possible. This allowed rapid penetration of the KOH and easy removal of the crop and other body contents. Specimens were cleared in cold 10% KOH for several hours depending on the size of the louse and the amount of sclerotization. They were then transferred to two changes of distilled water where the internal organs were removed. They remained in distilled water for at least two hours. They were then placed directly into Hoyer's Mounting Medium according to the following formula:

Distilled Water.....	50 ml.
Gum Arabic (clear crystals).....	30 gm.
Chloral Hydrate.....	200 gm.
Glycerine.....	20 ml.

1. Northeastern Bird Banding Association
   360 Brook Road
   West Hartford, Connecticut

2. W. R. Grace & Company
   Davison Chemical Division
   Baltimore, Maryland

The specimens were mounted on 75 x 25 mm. slides and covered with round, 12 mm. cover slips. After drying for several days on a 40°C. slide warmer they were ringed with asphaltum. Specimens were mounted separately or, when possible, a ♂ and ♀ of the same species were mounted on the same slide.

Measurements of total length and width and length of the abdomen are unreliable in many of the Menoponidae as they are dependent on the amount of pressure exerted by the cover slip in mounting which often causes "telescoping" of the abdomen. The length of the head is again an unreliable measurement owing to the fact that the head often does not lie flat under the cover slip and the occipital margin may be distorted. The measurements least affected by distortion seem to be those of the width of the head at the temples and at the preocular enlargement and probably also the width of the prothorax. Nevertheless, I believe that measurements are still an important character in that they give an indication of general size which can be used for comparative purposes.

In New England, there are commonly found seventeen of the nineteen orders of birds found in North America north of Mexico. The orders not found here are the Psittaciformes and the Trogoniformes. The petrels, can be found in the waters off the New England shores but due to a paucity of both collections of these birds and their Mallophaga, a study of this order was impossible.

The New Hampshire Fish and Game Department (1964) lists 296 species of birds occurring in the State of New Hampshire, 74 of which are considered rare or very irregular, leaving 222 more or less common species. The Checklist of Birds of Southern New Hampshire (distributed by The University of New Hampshire Bookstore) lists 214 species (215 including the Starling which was inadvertently omitted). Dearborn (1903), in his Birds of Durham and Vicinity lists 252 species, and the Audubon Daily Field Card published by A. W. Argue, Boston, Massachusetts, lists 282 species of birds which may be found in the New England area.

The host classification followed is that of the A. O. U. Checklist of North American Birds, fifth edition. Sub-species are omitted. Rare and accidental species are omitted except where noted. Exotic species successfully introduced are included.

During the course of this study, the Mallophaga collections of the United States National Museum, University of Rhode Island, University of Massachusetts, Harvard University and the Connecticut Agricultural Experiment Station were examined.

The New England records of Mallophaga from the Cornell University collection were also used.

The initials used in this paper are as follows:

J. E. K. - the author's collection.
A. E. B. - the A. Edmund Brower collection.
USNM - the United States National Museum collection.

U. N. H. - The University of New Hampshire bird skin collection.
M. C. Z. - the Museum of Comparative Zoology, Harvard University collection.
B. M. S. - Boston Museum of Science collection.

KEY TO THE SUBORDERS AND FAMILIES OF MALLOPHAGA
OF NEW ENGLAND BIRDS

1. Maxillary palpi four segmented; antennae four segmented, distinctly clubbed or capitate and concealed in grooves on the underside of the head; mandibles horizontal; meso- and metathorax usually separated by a suture---
----------Suborder AMBLYCERA 2.

Maxillary palpi absent; antennae five segmented filiform, not concealed in grooves; mandibles vertical; meso- and metathorax fused without a dividing suture----------Suborder ISCHNOCERA 4.

2. Head evenly expanded behind, broadly triangular-----
----------Family MENOPONIDAE

Head not evenly expanded or broadly triangular--------3.

3. Sides of head with strong bulbous swelling in front of eyes (infesting birds of prey, coots and grebes)--
----------Family LAEMOBOTHRIIDAE

Side of head straight (infesting passerines and hummingbirds)----------Family RICINIDAE

4. Tarsi with two claws; antennae five segmented-------
----------Family PHILOPTERIDAE

LAEMOBOTHRIIDAE

This family is closely allied to the family Ricinidae. Members of the Laemobothriidae resemble the Ricinidae in having all legs two-clawed and the antennae enclosed in capsules which open ventrally. In the Laemobothriidae the antennal capsules are bulbous and form conspicuous lateral swellings on the head. The lateral contours of the abdomen are unbroken by any notching at the junctions of the segments.

The family Laemobothriidae contains a single genus of about 26 species. Clay and Hopkins (1952) recognized the subgenus *Laemobothrion* which includes the species of *Laemobothrion* parasitic upon the Falconiformes and the subgenus *Eulaemobothrion* Ewing, 1929, as including the *Laemobothrion* infesting the order Gruiformes and the family Poticipitidae. The largest known species of Mallophaga belong to this family; some hawk infesting species are 10 mm. in length.

LAEMOBOTHRION

Laemobothrion Nitzsch, 1818. Germar's Mag. Ent., 3: 301.
Type species: *Laemobothrion maximum* (Scopoli, 1763)
(By subsequent designation, Johnston and Harrison, 1911, Proc. Linn. Soc. N. S. W., 36: 327).
Laemobothrium Burmeister, 1838. Handb. Ent., 2: 441
(Emendation).
Eulaemobothrion Ewing, 1929. Manual External Parasites: 189.
Type species: *Laemobothrion nigrum* Burmeister, 1838
(A synonym of *Laemobothrion atrum* (Nitzsch, 1818).
Ornithopeplechthos Eichler, 1941a. Stettin. Ent. Ztg., 102: 127.
Type species: *Laemobothrion opisthocomi* Cummings, 1913.
Pterophagus Eichler, 1941a. Stettin. Ent. Ztg., 102: 128.
Type species: *Laemobothrion gracilentum* Harrison, 1915
(A synonym of *Laemobothrion gracile* Giebel, 1874).
Plegadilymantikos Eichler, 1941a. Stettin. Ent. Ztg., 102: 128.
Type species: *Laemobothrion pallescens* Kellogg, 1908.

This genus is recognized by the two-clawed tarsi, bulbous antennal capsules and conspicuously large size. In *Laemobothrion* Nitzsch, 1818, *sens. str.* the clypeus is not emarginate in front and is without peg-like spines. Species of the subgenus *Eulaemobothrion* have the clypeus incurved and bearing several erect, peg-like spines on or near the front margin.

Laemobothrion atrum (Nitzsch, 1818)
Liotheum atrum Nitzsch, 1818. Germar's Mag. Ent., 3: 302.
Laemobothrion nigrum Burmeister, 1838. Handb. Ent., 2: 422.
Laemobothrion lathrobium Kolenati, 1846. Melet. Ent., 5: 139, pl. 19, fig. 6.
Type host: *Fulica atra* Linnaeus--European Coot.

Laemobothrion atrum (Nitzsch) has been reported from California (Kellogg, 1896), Ohio (Peters, 1928), Utah (Stanford, 1932), and North Carolina (Brimley, 1938). Procter (1938) says *L. atrum* "occurs on coots" in the Mt. Desert region of Maine.

No specimens of *L. atrum* taken in the New England area were seen.

Male: Head usually with 6 stout spines at the anterior margin, occasionally 2 or 4; one seta on each side of the gular plate. Thorax with the number of setae on the lateral projection varying from 3 to 4; sternal plate present, indented anteriorly, sides slightly concave; meso-metathoracic plate with 2 or 3 long setae on each side; abdomen with tergal plates I-VIII undivided; tergal plate IX may be continuous across the segment or divided medially. Sternal plates III-VI rectangular and separated from the pleurites; sternite V with comb-

like structures on each side, a smaller area also present on sternite VI and on the venter of the third femora.

Female: Chaetotaxy of the head as in the male. Thorax as in male. Abdomen with tergal plates I-VIII undivided; sternites I-VI as in the male, minute comb-like structures on sternum VI lacking.

Laemobothrion maximum (Scopoli, 1763)

Pediculus maximus Scopoli, 1763. Ent. Carniolica: 382.

Pediculus buteonis J. C. Fabricius, 1776. Gen. Ins.: 309 (*nn* for *P. maximus* Scopoli).

Pediculus circi Fourcroy, 1785. Entomol. Paris.: 518 (*nn* for Geoffroy's *Pediculus circi, fuscus, oblongus....*).

Pediculus milvi Schrank, 1803. Fauna Boica: 193. (*nn* for Frisch's "Huhnergeyerlaus".

Liotheum (Laemobothrion) giganteum Nitzsch, 1818. Germar's Mag. Ent. 3: 301. (*nn* for *maximus* Scopoli, *buteonis* Fabricius, and *circi* Geoffroy).

Nirmus buteonivorus Packard, 1872. Rep. U. S. Geol. Surv. 6: 733, fig. 61.

Laemobothrium nigrolimbatum Giebel, 1874. Insecta Epizoa: 252.

Laemobothrium titan Piaget, 1880. Les Pediculines: 578, pl. 49, fig. 1.

Laemobothrum loomisi Kellogg and Chapman, 1902. J. New York Ent. Soc. 10: 23, pl. 3, fig. 3.

Laemobothrium oligothrix Carriker, 1903, Univ. Stud. Nebraska 3: 161, pl. 4, fig. 7.

Laemobothrium caracaraensis Kellogg, 1906. J. New York Ent. Soc. 14: 48, pl. 2, fig. 6.

Laemobothrion eidmanni Eichler, 1942a. Mitt. Dtsch. Ent. Ges. 11: 14, figs. 1 and 2.

Laemobothrion anatolicum Eichler, 1942b. Zool. Anz. 137: 52, fig. 1.

Laemobothrion hoeschi Eichler, 1942b. Zool. Anz. 137: 56, fig. 2.

Laemobothrion niethammeri Eichler, 1942b. Zool. Anz. 137: 60, fig. 5

Laemobothrion indica Sen, 1942. Ind. J. Vet. Sci. Anim. Husb. 12: 169, fig. 1.

Laemobothrion hieraaëti Eichler, 1943. Mitt. Königl. Naturwiss. Inst. Sofia 16: 209, fig. 3.

Laemobothrion bureschi Eichler, 1943. Mitt. Königl. Naturwiss. Inst. Sofia 16: 209, fig. 4.

Laemobothrion mjöbergi Eichler, 1944b. Dtsch. Ent. Z. 1943: 64, figs. 11 and 12.

Laemobothrion chondrohieracis Eichler, 1953. Bonn. Zool. Beitr. 4: 265, figs. 32b and 32c.

Laemobothrion medesi Tendeiro, 1955. Bol. Cult. Guine Port. 9: 521, figs. 7 and 8.

Laemobothrion siddiquii Ansari ?1955. Proc. 7th Pak. Sci. conf. (Sect. Biol.): 57. (Also described as n. sp. in Ind. J. Ent. 17: 400).

Laemobothrion clayi Tuleschkov, 1957. Izv. Zool. Inst. Bulg. Akad. Nauk. (Otd. Biol.) 6: 281.

Laemobothrion lunai Tendeiro, 1958. Publ. Cult. da Diam. Comp. Angola 40: 99, figs. 16 and 17.
Laemobothrion tuleschkovi Bechet, 1961. Stud. Cerc. Biol. 12: 220, fig. 2a, b.
Type host: *Buteo buteo* (Linnaeus).

New England hosts:
Pandion haliaetus (Linnaeus)--Osprey.
Aquila chrysaetos (Linnaeus)--Golden Eagle.

This species differs from *L. tinnunculi* (Linnaeus) as follows: Head with flatter anterior margin; prominent lateral preocular swellings; fine short seta adjacent to very long seta on latero-dorsal temple region. Gular plate anteriorly with 2-6 short to medium setae on each side. Sitophore sclerite of hypopharynx with 2 large holes. Prothorax with patch of short setae along anterior ventral margin. Prosternal plate with 1-6 short setae on each lateroanterior portion, in addition to a minute anterior seta.

No records of this species being taken in New England are known.

Laemobothrion tinnunculi (Linnaeus, 1758)
Pediculus tinnunculi Linnaeus, 1758. Syst. Nat., ed. 10: 612.
Nirmus hasticeps Olfers, 1816. De Veget. et Anim. Corp. in Corp. Anim. Reper. Comment.: 87.
Liotheum hasticeps Nitzsch, 1818, Germar's Mag. Ent. 3: 302. (*nn* for *P. tinnunculi* Linnaeus, 1758).
Laemobothrium hastipes Burmeister, 1838. Handb. Ent. 2: 442.
Laemobothrium laticolle Denny, 1942. Mon. Anopl. Birt.: 203 and 239, pl. 23, fig. 4.
Nirmus albicillae Denny, 1952. List Brit. Animals in Brit. Mus., pt. II, Anopl.: 39. (*nn* for *L. laticolle* Denny, 1842).
Physostomum longetarsatum Piaget, 1895. Tijdschr. Ent. 38: 101.
Laemobothrium intermedium McGregor, 1917. Ent. News, 28, 434, pl. 28, figs. 2 and 5.
Laemobothrion aquab Ansari, ?1955. Proc. 7th Pak. Sci. Conf. (Sect. Biol.): 57. (Also described as n. sp. in Ind. J. Ent. 17: 400 and 18: 437).
Laemobothrion semicirculus Carriker, 1961. Nov. Cien. Mus. Hist. Nat. LaSalle 28: 39, fig. 41.
Type host: *Falco tinnunculus* Linnaeus--Kestrel.
New England hosts:
Falco columbarius Linnaeus--Pigeon Hawk.
Falco sparverius Linnaeus--Sparrow Hawk.

Head with somewhat rounded anterior margin; reduced lateral preocular swellings. A pair of adjacent long setae on laterodorsal temple region. No setae on the gular plate. Sitophore sclerite of hypopharynx with 2 small holes. Prothorax with only a few short setae along the anterior margin; prosternal plate somewhat flattened anteriorly, with only one short seta on each side.

No published records of this species being taken in New England are known.

KEY TO THE NEW ENGLAND MENOPONIDAE

1. Gular plate trilobed, head crescent shaped with narrow preocular slit on dorso-lateral margin. Abdominal pleurite with postero-ventral angles prolonged posteriorly----------*PSEUDOMENOPON*
   Not as above----------2

2. Head with a pair of ventral sclerotized processes arising near base of palpi----------3
   Head without such processes----------4

3. Distal anterior angle of second antennal segment prolonged and rounded. Abdominal pleurites with postero-ventral angles prolonged posteriorly----------*HOHORSTIELLA*
   Distal anterior angle of second antennal segment not prolonged----------*MENACANTHUS*

4. Combs of short spines on third femora----------5
   Combs of short spines on third femora absent; patches may be present----------9

5. Last segment of antenna with an indication of division into two. Abdominal sternites III-IV in ♀ , and III-V in ♂ two or more combs of short setae on each side-----*CUCULIPHILUS*
   Last segment of antenna without indications of division into two----------6

6. Relatively large species (4-8 mm.). Narrow preocular slits; antennal cavity deep and partially covered from below. Gular and prosternal plates well developed. Prosternal plate with more than two median setae----------*PIAGETIELLA*
   Not as above----------7

7. Segments of antennae short, second segment produced and pointed, last segment globate----------*CICONIPHILUS*
   Not as above----------8

8. Abdomen ovoid with greatest width at segment IV. Dorsal bands joining occipital and preocular sclerotized areas absent. Deep broad or narrow preocular slit. Sternite III with two or more combs of spines----------*KURODAIA*
   Temples square or flatly rounded, never tapering; head with conspicuous dark brown or black sclerotized areas; one at each preocular notch, one at each proximal end of latero-ventral margin, one pair on the occipital margin linked by a transverse band and by lighter bands to the preocular areas------*COLPOCEPHALUM*

9. Latero-dorsal margin of head with a small protuberance bearing a seta; first two antennal segments with large distal expansions. Head triangular in outline. Large species; (4.0+) pronotum with lateral flanges----------*TRINOTON*
Not as above----------10

10. Head without preocular notch or slit; both sexes with a group of long stout setae on each postero-lateral angle of enlarged sternite II; third femora and abdominal sternites with or without brushes----------*MYRSIDEA*
Not as above----------11

11. Prosternal plate with thickened margin and with more than two median setae; preocular notch or slit absent----------12
Without all of the above combination of characters----------13

12. Gular plate horseshoe shaped; temples greatly expanded laterally----------*EUREUM*
Gular plate not horseshoe shaped; temples not greatly expanded but broad and angulate----------*DENNYUS*

13. Head without preocular notch or slit; cavity between latero-dorsal and latero-ventral margins of head pouch-like----------15
Not as above----------14

14. Head with narrow preocular slit; prosternal plate with a median pointed process; prosternum with two median setae----------*EIDMANIELLA*
Without above combination of characters----------17

15. Prosternal plate with more than two median setae; gular plate large with or without central perforation and lateral processes----------*MACHAERILAEMUS*
Prosternal plate with two median setae----------16

16. Prosternal plate with deeply serrated posterior margin----------*HOLOMENOPON*
Prosternal plate without deeply serrated posterior margin----------*AUSTROMENOPON*

17. Prosternum with two median setae; mesosternum with more than two median setae; shallow preocular notch; head slightly wider than long; abdomen ovoid with sparse chaetotaxy; 3rd femora without brushes only 3-5 setae present----------*BONOMIELLA*
Prosternum with two or more median setae; abdomen narrowly elongate or elongate-ovoid----------18

18. Temporal angles square or flatly rounded; brushes on third femora and sternite IV----------*ACTORNITHOPHILUS*
Temples not as above----------19

19. Abdomen narrow; pleural plates very narrow; definite brush of setae on sternite IV only----------*MENOPON*
Abdomen narrow; pleural plates well developed; brushes of setae on sternite IV and others----------*AMYRSIDEA*

ACTORNITHOPHILUS

Actornithophilus Ferris, 1916. Canad. Ent., 48: 303.
Type species: *Colpocephalum unseriatum* Piaget, 1880.
Diactornithophilus Balat, 1953. Zool. Ent. Listy, 2: 96 and 104.
Type species: *Actornithophilus (Diactornithophilus) svobodyae* Balat, 1953.
Clypeodon Timmermann, 1954d. Ann. Mag. Nat. Hist., (12), 7: 830.
Type species: *Colpocephalum incisum* Piaget, 1880.
Larithophilus Zlotorzycka, 1963a. Acta Parasit. Polon., 11: 223.
Type species: *Colpocephalum maurum* Nitzsch, 1866.

Menoponidae without sclerotized processes arising near base of maxillary palpi and without combs of spine-like setae on the venter of the 3rd femora or any of the abdominal sterna. Antennal fossae never deep; preocular notch present, never a narrow preocular slit, anterior margin of head rounded, the temples very prominent, their anterior margins nearly at right angles to the longitudinal axis of the body gular plate and setae present. Thorax distinctly three-segmented, the mesothorax small but clearly defined dorsally. Pro-, meso-, and metasternal plates present; 2 or 3 prosternal setae; mesosternal plate with one or more central setae. Third femora and abdominal sternite IV with thick or sparse brushes, sternite III and V may also have brushes but always less well developed than those on IV.

Actornithophilus bicolor (Piaget, 1880)
Colpocephalum bicolor Piaget, 1880. Les Pediculines: 56, pl. 47, fig. 1.
Colpocephalum paetulum Kellogg and Kuwana, 1900. Proc. Acad. Sci. Philad., 23: 157, pl. 7, fig. 4.
Colpocephalum spinulosum obscurum Carriker, 1910. (*nec* Giebel, 1874). Ent. News, 21: 52.
Colpocephalum oculare Carriker, 1910. Ent. News 21: 52, pl. 5, fig. 1.
Colpocephalum tigrum Kellogg and Mann, 1912a. Ent. News, 23: 64.
Type host: *Arenaria interpres* (Linnaeus)--Ruddy Turnstone.

Head with 6 short hairs on clypeal margin; eye distinct, with seta; temples prominent; ocular emargination deep and narrow; occipital margin slightly concave. Prothorax about twice as broad as long; prosternal setae not surrounded by the prosternal plate. Metathorax with sides broadly diverging; division between meso- and metathorax apparent. Posterior margin of metathorax straight with a row of long hairs. Metanotum with long anterior setae. Abdomen elongate-oval, broadest at 3rd and 4th segments.

Specimens	Host	Locality	Date	Collector
1♂	*Arenaria interpres*	Hampton, NH	IX-9-1965	J.E.K.
1♀	*Sterna paradisaea*	--	--	U.N.H.

Measurement of male from *Arenaria interpres* (Linnaeus):

Head Length	.33
Head Width	.51
Prothorax Width	.36
Metathorax Width	.48
Abdomen Length	1.17
Abdomen Width	.59
Total Length	1.93

Measurement of female from *Sterna paradisaea* Pontoppidan:

Head Length	.31
Head Width	.46
Prothorax Width	.33
Metathorax Width	.43
Abdomen Width	.58
Abdomen Length	.99
Total Length	1.66

Carriker (1910) has collected this species in Michigan, and Kellogg and Mann (1912a) have reported it from Baja, California. Peters (1936) has reported an *Actornithophilus* sp. from a Ruddy Turnstone in Florida.

Actornithophilus flumineus Clay, 1962

Actornithophilus flumineus Clay, 1962. Bull. Brit. Mus. (N.H.), Ent., 11: 217, pl. 4, fig. 5.

Type host: *Actitis hypoleucos* (Linnaeus).

North American host:

Actitis macularis (Linnaeus)--Spotted Sandpiper.

Measurements:	Type Male	Type Female
Head Length	.35	.37
Head Width	.43	.47
Prothorax Width	.31	.33
Metathorax Width	.41	.48
Abdomen Length	.97	1.30
Abdomen Width	.49	.64
Total Length	1.70	2.08

These measurements are all from Mallophaga taken from the type host. Whether the measurements will be the same from those collected from *Actitis macularis* remains to be seen. No specimens were collected.

Actornithophilus hoplopteri maculosus Carriker, 1963a.
Actornithophilus hoplopteri maculosus Carriker, 1963a. Rev. Brasil Biol., 23: 295, fig. 3
Type host: *Charadrius vociferus* Linnaeus--Killdeer.

No specimens of this Mallophaga have been found.

Peters (1936) reports *Actornithophilus aegialitidis* (Durrant, 1906) from a Killdeer in New Hampshire but this is an *Austromenopon*.

Actornithophilus limarius Clay, 1962
Actornithophilus limarius Clay, 1962. Brit. Mus. (N. H.), 11: 222, pl. 5, figs. 2 and 5; pl. 11, fig. 4.
Type host: *Limnodromus scolopaceus* (Say)--Long-tailed Dowitcher.
Other North American host:
Limnodromus griseus (Gmelin)--Short-tailed Dowitcher.

Miss Clay described this species from 56 males and 45 females from *Limnodromus scolopaceus* in California and 55 males and 45 females from *L. griseus* in South Carolina.

Specimens	Host	Locality	Date	Collector
1 imm.	*Limnodromus griseus*	Phippsburg, Me.	VII-19-1964	J.E.K.

This may be *A. limnaris* Clay, 1962.

Measurements of *A. limnaris* Clay, 1962:

Head Length	.32	.35
Head Width	.46	.49
Prothorax Width	.34	.35
Metathorax Width	.42	.48
Abdomen Length	1.15	1.38
Abdomen Width	.55	.66
Total Length	1.85	2.12

Actornithophilus ocellatus (Rudow, 1869)
Colpocephalum ocellatum Rudow, 1869. Z. ges. NatWiss., 34: 392.
Type host: *Numenius phaeopus* (Linnaeus)--Whimbrel.

There are no records of this species being taken in the New England area.

Actornithophilus ochraceus (Nitzsch, 1818)
Liotheum ochraceum Nitzsch, 1818. Germar's Mag. Ent., 3: 299.
Colpocephalum flavipes Giebel, 1874. Insecta Epizoa: 276.
Colpocephalum timidum Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 109, pl. 12, fig. 6.

Colpocephalum perplanum Kellogg and Chapman, 1899. Occ. Pap. Calif. Acad. Sci., 6: 109, pl. 7, fig. 8.
Actornithophilus perrarus Blagoveshtchensky, 1948. Mag. Parasit., Leningr., 10: 270, fig. 8.
Type host: *Pluvialis apricaria* (Linnaeus)--Eurasian Golden Plover.
New England hosts:
Charadrius semipalmatus Bonaparte--Semipalmated Plover.
Charadrius melodus Ord--Piping Plover.
Pluvialis dominica (Müller)--American Golden Plover. (Occasional in New England associated with Fall easterly storms).
Squatarola squatarola (Linnaeus)--Black-bellied Plover.

Specimens	Host	Locality	Date	Collector
1♂, 1 imm.	*Charadrius semipalmatus*	Brunswick,Me.	IX-1-1964	H. Tyler
2♂, 6 ♀	*Squatarola squatarola*	Hampton, NH	X-11-1964	J.E.K.
1 imm.	" "	Brunswick,Me.	X-27-1964	H. Tyler

Measurements of *A. ochraceus* from *Squatarola squatarola:*

	2♂		6 ♀ (range)
Head Length	.31	.33	.33 - .36
Head Width	.48	.48	.48 - .55
Prothorax Width	.33	.31	.34 - .37
Metathorax Width	.42	.40	.46 - .51
Abdomen Length	.92	.91	1.09 - 1.27
Abdomen Width	.57	.54	.64 - .73
Total Length	1.62	1.54	1.80 - 2.01

Peters (1928) has reported this species from Ohio, and Peters (1936) reports it from Georgia, Illinois, and South Carolina. Brimley (1938) reports it from North Carolina.

Actornithophilus paludosus Clay, 1962
Actornithophilus paludosus Clay, 1962. Bull. Brit. Mus. (N.H.) Ent., 11: 219, pl. 5, figs. 3 and 6: text fig. 47.
Type host: *Tringa nebularia* (Gunnerus).
North American host:
Totanus melanoleucus (Gmelin)--Greater Yellowlegs.

This species is recognized by the presence of long dorsal setae on the metathorax and by the prosternal plate not enclosing the prosternal setae.

Specimens	Host	Locality	Date	Collector
3♂, 3♀, 1 imm.	*Totanus melanoleucus*	Durham, NH	VIII-30-1965	J.E.K.

Measurements of *A. paludosus* from *Totanus melanoleucus* (Gmelin):

	3♂			3♀		
Head Length	.33	.33	.33	.34	.33	.33
Head Width	.46	.49	.46	.48	.49	.49
Prothorax Width	.31	.34	.33	.33	.31	.33
Metathorax Width	.40	.42	.40	.46	.43	.45
Abdomen Length	1.06	1.08	1.06	1.33	1.93	2.02
Abdomen Width	.49	.54	.52	.65	.60	.60
Total Length	1.68	1.78	1.77	2.04	1.93	2.02

Actornithophilus pediculoides (Mjoberg, 1910)

Colpocephalum pediculoides Mjoberg, 1910. Ark. Zool. 6: 44, pl. 2, fig. 6.

Type host: *Arenaria interpres* (Linnaeus)--Ruddy Turnstone.

Since the original description, the only other collection has been made in the Philippine Islands. Emerson (1956) placed this species in the genus *Longimenopon* because of the characters of the head and the abdominal chaetotaxy. However, Clay (1962) because of the brush of setae on sternite IV, characteristic of *Actornithophilus* but not of *Longimenopon*, placed it in the genus *Actornithophilus*. For a figure of this rare species see Emerson (1956a).

Actornithophilus piceus lari (Packard, 1870)

Colpocephalum lari Packard, 1880. Amer. Nat., 4: 96, pl. 1, fig. 1.

Colpocephalum fuscipes Piaget, 1880. Les Pediculines: 567, pl. 47, fig. 7.

Colpocephalum funebre Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 147, pl. 12, fig. 7.

Colpocephalum fumidum Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 523, pl. 71, fig. 5.

Colpocephalum abbotti, Kellogg, 1899. Occ. Pap. Calif. Acad. Sci., 6: 113, pl. 7, fig. 10.

Type host: *Larus marinus* Linnaeus--Great Black-backed Gull.

Other New England hosts:

Larus hyperboreau Gunnerus--Glaucous Gull.
Larus argentatus Pontoppidan--Herring Gull.
Larus delawarensis Ord--Ring-billed Gull.
Larus atricilla Linnaeus--Laughing Gull.
Larus philadelphia (Ord)--Bonapartes Gull.
Rissa tridactyla (Linnaeus)--Black-legged Kittiwake.

Actornithophilus piceus lari (Packard, 1870) has been reported from New Jersey (Anon. 1909), Ohio (Peters, 1928), North Carolina (Brimley, 1938) and from Quebec (Whitehead, 1954).

Specimens	Host	Locality	Date	Collector
1♂, 2 ♀	*Larus marinus*	Marshfield, Mass.	XII-30-1930	USNM
1 slide	" "	" "	XII-30-1930	MCZ

Actornithophilus piceus piceus (Denny, 1842)

Colpocephalum piceum Denny, 1842. Mon. Anopl. Brit.: 198 and 212, pl. 18, fig. 4.

Colpocephalum marurum Nitzsch, 1866. *In Giebel*, Z. ges. NatWiss., 28: 395.

Colpocephalum sulcatum Piaget, 1880. Les Pediculines: 565, pl. 47, fig. 5.

Colpocephalum crassipes Piaget, 1880. Les Pediculines: 566, pl. 47, fig. 6.

Actornithophilus funebre candidus Carriker, 1949a. Proc. U. S. Nat. Mus., No. 3254, 100: 17.

Larithophilus negroidalis Zlotorzycka, 1963a. Acta Parasit. Polon., 11: 226, fig. 1b.

Larithophilus sperabilis Zlotorzycka, 1963a. Acta Parasit. Polon., 11: 227, fig. 1c.

Type host: *Thalasseus sandvicensis* (Latham)--Sandwich Tern.

New England hosts:

Sterna hirundo Linnaeus--Common Tern.

Sterna paradisaea Pontoppidan--Arctic Tern.

Sterna dougallii Montagu--Roseate Tern.

Sterna albifrons Pallas--Least Tern.

Thallasseus maximus (Boddaert)--Royal Tern (Rare).

Clay (1962) states concerning *A. piceus lari* (Packard, 1870) and *A. piceus piceus* (Denny, 1842): "The populations of *Actornithophilus* found on the Laridae have not been revised in detail, and must wait for a larger amount of material from more host species. In general, individuals from the Sterninae (i. e., *piceus* Denny) are smaller than those from the Larinae (i. e., *lari* Packard)."

Actornithophilus sabulosus Clay, 1962

Actornithophilus sabulosus Clay, 1962. Bull. Brit. Mus. (N. H.) Ent., 11: 228, pl. 4, fig. 3; pl. 9, fig. 1 and text fig. 7, 12, 18, 61, and 62.

Type host: *Charadrius semipalmatus* Bonaparte--Semipalmated Plover.

In this species the metanotum has no long anterior setae; pleurites without well marked pattern of internal thickening and posterior margin of mesosome with well marked pointed projections on each side.

Specimens	Host	Locality	Date	Collector
1♂, 1 imm.	*Charadrius semipalmatus*	Brunswick,Me.	IX-1-1964	H. Tyler
1 imm.	" "	Rye, NH	IX-4-1965	B. Barrett

Actornithophilus stictus (Kellogg and Paine, 1911)

Colpocephalum stictum Kellogg and Paine, 1911. Ent. News, 22: 77, fig. 2.

Type host: *Capella gallinago* (Linnaeus)--Common Snipe.

Described from a single male specimen with measurements:

Head Length	.34
Head Width	.40
Thorax Width	.34
Abdomen Length	.78
Abdomen Width	.42
Total Length	1.40

The original description from a snipe collected at Monterrey, California, appears to be the only published record of this species.

Actornithophilus totani (Schrank, 1803)
Pediculus totani Schrank, 1803. Fauna Boica: 191.
Colpocephalum affine Nitzsch, 1874. *In Giebel*, Insecta Epizoa: 276.
Type host: *Totanus totanus* (Linnaeus)--Redshank.
New England host:
Totanus flavipes (Gmelin)--Lesser Yellowlegs.

This species is recognized by the absence of long anterior setae on the metanotum, by the prosternal plate surrounding the prosternal setae, and by the presence of anterior dorsal setae on the last segment of the abdomen in the male. In the female at least 2 or more tergites have 7 or more central setae and tergites II-VIII have a row of anterior setae.

Measurements:	♂	♀
Head Length	.36	.37
Head Width	.50	.52
Prothorax Width	.35	.36
Metathorax Width	.45	.51
Abdomen Length	1.17	1.49
Abdomen Width	.55	.70
Total Length	1.93	2.69

Actornithophilus umbrinus (Burmeister, 1838)
Colpocephalum umbrinus Burmeister, 1838. Handb. Ent., 2: 438.
Colpocephalum trilobatum Giebel, 1874. Insecta Epizoa: 275.
Colpocephalum umbrinum Piaget, 1880 (*nec* Burmeister, 1838). Les Pediculines: 556, pl. 46, fig. 6.
Colpocephalum spinulosum minor Kellogg and Chapman, 1899 (*nec* Piaget, 1880). Occ. Pap. Calif. Acad. Sci., 6: 112, pl. 7, fig. 9.
Colpocephalum morsitans Kellogg and Mann, 1912. Ent. News, 23: 15, fig. 3.
Colpocephalum umbrosum Harrison, 1916. Parasitology, 9: 56, (*nn* for *C. umbrinum* Piaget, 1880).
Actornithophilus albus, Emerson, 1948a. Ent. News, 59: 178, figs. 1-2 (*nn* for *C. spinulosum minor* Kellogg and Chapman, 1899).
Actornithophilus hrabei Balat, 1953. Zool. Ent. Listy, 2: 98 and 104, fig. 2.
Actornithophilus hirsutus Carriker, 1954. Florida Ent., 37: 139, fig. 1.

Type host: *Erolia testacea* (Pallas)--Curlew Sandpiper.
New England hosts:
Actitis macularis (Linnaeus)--Spotted Sandpiper.
Calidris canutus (Linnaeus)--Knot.
Erolia maratima (Brünnich)--Purple Sandpiper.
Erolia melanotos (Vieillot)--Pectoral Sandpiper.
Erolia minutilla (Vieillot)--Least Sandpiper.
Erolia alpina (Linnaeus)--Dunlin.
Ereunetes pusillus (Linnaeus)--Semipalmated Sandpiper.
Crocethia alba (Pallas)--Sanderling.

Male: Head typical of the genus, temples prominent; ocular emarginations rather deep; eyes large. Two long and 2 short setae on each lateral margin of the gular region. Thorax 3 segmented; mesothorax one-half the length of the metathorax. Prothoracic sternal plate without setae on the posterior margin. Four long setae on the posterior margin of the patch of spines on the venter of the 3rd femur.

Female: Larger than the male but of the same general shape. Setae on the dorsum of the female are less numerous and all are larger than on the male.

Specimens	Host	Locality	Date	Collector
1 ♀	*Calidris canutus*	Phippsburg, Me.	IX-1-1965	H. Tyler
1 slide	*Erolia alpina*	N. Eastham, Mass.	X-30-1935	H.S. Peters
1 ♂	*Crocethia alba*	Nahant, Mass.	IX-24-1914	USNM
1 imm.	" "	" "	IX-24-1914	MCZ
1 ♀	*Ereunetes pusillus*	Madbury, N.H.	IX-22-1964	J.E.K.
1 ♀	" "	Hampton, N.H.	X-10-1964	J.E.K.

Measurements: Female *A. umbrinus* from *Ereunetes pusillus* (L.)

Head Length	.31
Head Width	.43
Prothorax	.33
Metathorax	.45
Abdomen Length	1.18
Abdomen Width	.61
Total Length	1.89

AMYRSIDEA

Amyrsidea Ewing, 1927. J. Wash. Acad. Sci., 17: 90.
Type species: *Menopon ventrale* Nitzsch, 1866.
Argimenopon Eichler, 1947. Ark. Zool., 39A, No. 2: 5.
Type species: *Argimenopon polytrichum* Eichler, 1947.
Cracimenopon Carriker, 1954a. Novedades Colombianas, 1: 22.
Type species: *Cracimenopon mituensis* Carriker, 1954a.
Desumenopon Carriker, 1954a. Novedades Colombianas, 1: 25.
Type species: *Amyrsidea praegracilis* Carriker, 1950.

Forehead reduced and evenly rounded in front; laterodorsal margin with shallow notch or narrow preocular slit; antennal fossae covered by a transversely sutured expansion of the head; antennae 5 segmented, the 3rd segment showing a suture at the base, the 5th segment elongate and cylindrical. Eyes absent. Gular plate well developed. Prosternum with 2 median setae, mesosternum with more than 2 median setae. Legs with 1st tibia without spurs at distal end; 2nd and 3rd tibiae provided with tibial spurs. Third femora and sternites III-IV or V, IV-V or IV-VI with thick or scattered brushes of small and normal setae; sternites III and VII may have more scattered brushes; sternal brushes may be absent; abdomen with or without internal pleural thickening.

Amyrsidea megalosoma (Overgaard, 1943)
Menopon megalosomum Overgaard, 1943. Ent. Medd., 23: 13, figs. 5-6.
Menopon nexapilosus Vrazic, 1956. Vet. Arhiv. Zagreb, 26: 121, 126, and 129.
Type host: *Phasianus colchicus* Linnaeus--Ring-necked pheasant.
Other New England host:
Bonasa umbellus (Linnaeus)--Ruffed Grouse.

In the medial part of each abdominal segment a group of posteriorly directed long hairs are found. Two parallel rows of 4-6 long hairs are found on the posterior margin of the ventral aspect of the head. Lateral edges of the abdominal pleurites protruding and dark brown.

Measurements of 10 ♂ and 10 ♀ (Averages):

Head Length	.34 ♂	.35 ♀
Head Width	.64 ♂	.68 ♀
Total Length	1.83 ♂	2.19 ♀

Specimens	Host	Locality	Date	Collector
1 slide	*Phasianus colchicus*	Winchester, NH	VII-20-1932	L.R.Nelson (USNM)
3 slides	" "	W. Greenwich, RI	IV-15-1958	J.A.Mathewson (USNM)

AUSTROMENOPON

Austromenopon Bedford, 1939. Onderstpoort J. Vet. Sci., 12: 122.
Type species: *Menopon crocatum* Nitzsch, 1866.
Australmenopon Conci, 1942. Boll. Soc. Ent. Ital., 74: 30.
Type species: *Menopon cinerea* Thompson, 1939.

Head about twice as broad as long; the laterodorsal margins without a preocular notch or slit; cavity between laterodorsal and lateroventral margins of head pouch-like and usually deep, with a basal thickening passing up to the laterodorsal margin and not roofed over distally by the fusion between dorsal and ventral margins. Antennae 4 seg-

mented. Prosternum with 2 median setae; prosternal plate without deeply serrated posterior (cf. *Holomenopon*). Legs normal; hind femora with a few setae on the venter, not sufficiently numerous to form a brush; mid and hind tibiae with 3 setae, 2 or 3 spine-like on ventral apex. Abdomen elongate oval, with the tergal, sternal and paratergal plates well developed. Male genitalia with the basal plate short, narrow in front and gradually broadening towards the apex where it is expanded; parameres present.

Austromenopon aegialitidis (Durrant), 1906

Menopon aegialitidis Durrant, 1906. Ohio Nat., 6: 529, fig. 1c.
Type host: *Charadrius vociferus* Linnaeus--Killdeer.
Other New England hosts:
Charadrius semipalmatus Bonaparte--Semipalmated Plover.
Charadrius melodus Ord--Piping Plover.

Described from a female collected at Fort Collins, Colorado.

Measurements:

Head Length	.29
Head Width	.48
Thorax Width	.47
Total Length	1.30

Peters (1928) and Geist (1931) have reported this species from Ohio and Peters (1936) has reported it from Alabama, Louisiana, New Hampshire, South Carolina and Virginia. Emerson (1940) reports it from Oklahoma.

Austromenopon alpinum Timmermann, 1954c

Austromenopon alpinum Timmermann, 1954c. Bonn. Zool. Beitr., 5: 202, fig. 8.
Type host: *Erolia alpina* (Linnaeus)--Dunlin.

Timmermann (1954c) described this species from a ♂ calling it a small colorless species with the measurements: Head width 0.40, Head length 0.23, and Total length 1.17. Clay (1959) includes this species in the *lutescens* group which includes *A. lutescens* (Burmeister) from *Philomachus pugnax*, *A. alpinum* Timmermann from *Calidris alpina*, and the populations from *Crocethia alba*, *Arenaria* and *Tringa*. She states that, "Except for *lutescens*, too little material of this group has been seen to make a decision on the status of these populations."

Austromenopon atrofulvum (Piaget, 1880)

Menopon atrofulvum Piaget, 1880. Les Pediculines: 483, pl. 39, fig. 2.
Menopon sternophilum Ferris, 1932. Bull. Bishop Mus., 98: 59, fig. 12.
Menopon fuscofasciatum minor Piaget, 1937 (*nec* 1880). *In Thompson*, Ann. Mag. Nat. Hist., (10), 20: 24.
Actornithophilus leucopleurus Tuleshkov, 1959. Compt. Acad. Bulgare Sci. 12: 557, fig. 1.

Type host: *Thalasseus bergi* (Lichtenstein).
New England hosts:
Sterna hirundo Linnaeus--Common Tern.
Sterna paradisaea Pontoppidan--Arctic Tern.
Sterna dougallii Montagu--Roseate Tern.
Sterna albifrons Pallas--Least Tern.

Peters (1936) lists *Menopon* sp. from *Sterna dougallii* Montagu from Massachusetts. This is probably an *Austromenopon atrofulvum* and is the only recorded mention of a collection from the New England area.

Austromenopon corporosum (Kellogg and Kuwana, 1900)
Menopon corporosum Kellogg and Kuwana, 1900. Proc. Acad. Nat. Sci. Philad., 23: 158, pl. 7, fig. 5.
Type host: *Phalaropus fulicarius* (Linnaeus)--Red Phalarope.

This species along with *A. spenceri* Timmermann from *Lobipes lobatus* (Linnaeus)--Northern Phalarope may eventually be found in New England. They are mentioned together because Clay (1959) states that, "There is insufficient material available to show whether *A. spenceri* Timmermann, 1956, can be separated from *corporosum*."

Austromenopon durisetosum (Blagoveshtchensky, 1948)
Menopon durisetosum Blagoveshtchensky, 1948. Mag. Parasit., Leningr., 10: 263, fig. 3.

This species has not been recorded from the United States and beyond the fact that it is parasitic upon the Common Snipe, I have no information concerning it.

Austromenopon merguli Timmermann, 1954c
Austromenopon merguli Timmermann, 1954c. Bonn. Zoll. Beitr., 5: 197.
Type host: *Plautus alle* (Linnaeus)--Dovekie.

When Peters (1936) recorded *Holomenopon loomisii* (Kellogg and Chapman) from the Dovekie in Massachusetts, Pennsylvania, and South Carolina, he undoubtedly meant this species of *Austromenopon*.

Specimens	Host	Locality	Date	Collector
1 ♀	*Plautus alle*	Mt. Desert, Me.	XII-3-1934	A.E.B.
1 ♀ , 3 ♂	" "	Bar Harbor, Me.	XI-24-1932	A.E.B.
1 ♀	" "	Durham, NH	XII-7-1962	--
1 slide	" "	Osterville, Mass.	I-21-1931	USNM

Measurements:	1 ♂	5 ♀ (Average)
Head Length	.22	.25
Head Width	.42	.48
Prothorax Width	.34	.41
Metathorax Width	--	.50
Abdomen Length	.69	.94
Abdomen Width	.58	.70
Total Length	1.15	1.56

Austromenopon nigropleurum (Denny, 1842)

Menopon nigro-pleurum Denny, 1842. Mon. Anopl. Brit.: 200 and 224, pl. 20, fig. 1.

Type host: *Alca torda* Linnaeus--Razorbill.

Austromenopon species from the Alcidae have many of the dorsal head setae spine-like (Clay, 1959). The Razorbill is an infrequent bird off the coast of New England in the winter months and this species could be collected in New England.

Austromenopon phaeopodis (Schrank, 1802)

Pediculis phaeopodis Schrank, 1802. Briefe Naturhistorischen, physikalischen und oekonomischen Inhaltes an Herrn Nau. Erlangen: 361.

Menopon ambiguum Nitzsch, 1874. In Giebel, Insecta Epizoa: 295.

Type host: *Numenius phaeopus* (Linnaeus).

Specimens	Host	Locality	Date	Collector
3♀	*Numenius phaeopus*	Phippsburg, Me.	IX-9-1965	H. Tyler

Measurements:	3♀		
Head Length	.28	.27	.30
Head Width	.51	.54	.57
Prothorax Width	.43	.42	.43
Metathorax Width	.51	.51	.55
Abdomen Length	1.02	1.09	1.23
Abdomen Width	.75	.78	.82
Total Length	1.66	1.72	1.90

Clay (1959) has erected a neotype of this species and gives an excellent figure of it.

Austromenopon squatarolae Timmermann, 1954c

Austromenopon squatarolae Timmermann, 1954c. Bonn. Zoll. Beitr. 5: 199.

Type host: *Squatarola squatarola* (Linnaeus)--Black-bellied Plover.

Timmermann (1954c) gives the following measurements:

	Head Width	Head Length	Total Length
♂	0.46	0.25	1.35
♀	0.56	0.28	1.85

The types of this species were collected in California in 1939.

Austromenopon transversum (Denny, 1842)

Menopon transversum Denny, 1842. Mon. Anopl. Brit.: 201 and 226, pl. 21, fig. 7.

Menopon ridibundis Denny, 1842. Mon. Anopl. Brit.: 201 and 227, pl. 20, fig. 3.

Menopon obtusum Giebel, 1866. Z. ges. NatWiss., 28: 392.
Menopon phaeopus Nitzsch, 1866. *In Giebel*, Z. ges. NatWiss., 28: 392.
Menopon pachypus Piaget, 1888. Tijdschr. Ent., 31: 161, pl. 4, fig. 4.
Menopon infrequens Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 161, pl. 15, fig. 5.
Menopon lemniscatum Enderlein, 1908. Dtsch. südpolar Exped. Zool., 2: 456, pl. 62, figs. 203, 207, and 210.
Type host: *Rissa tridactyla* (Linnaeus)--Black-legged Kittiwake.
New England hosts:
Larus hyperboreus Gunnerus --Glaucous Gull.
Larus marimus Linnaeus--Great Black-backed Gull.
Larus argentatus Pontoppidan--Herring Gull.
Larus delawarensis Ord--Ring-billed Gull.
Larus atricilla Linnaeus--Laughing Gull.
Larus philadelphia (Ord)--Bonaparte's Gull.

No extensive work has been done on the various populations infesting the various members of the Larinae perhaps due as much to lack of material as to lack of workers. Sufficient collecting is sure to reveal the presence of *Austromenopon transversum* on all members of New England Larinae.

Specimens	Host	Locality	Date	Collector
1 slide	*Pagophila eburnea*	Boothbay Harbor,Me.	I-1-1952	A.O.Gross (USNM)

Austromenopon uriae Timmermann, 1954c
Austromenopon uriae Timmermann, 1954c. Bonn. Zool. Beitr., 5: 196, fig. 2.
Type host: *Uria aalge* (Pontoppidan)--Common Murre.

Despite its name the Common Murre is an uncommon bird in New England. I have never captured one to examine it for Mallophaga and I include it here because it is the type host of *A. uriae* and sufficient collecting will undoubtedly reveal its presence.

BONOMIELLA

Bonomiella Conci, 1942. Riv. Soc. Stud. Venezia Tridentina, 23: 1.
Type species: *Bonomiella insolitunguicolata* Conci, 1942.

Head slightly broader than long; laterodorsal margin with a shallow preocular notch backed by a narrow, sclerotized area. The terminal segment of the antenna is short and irregular in shape. Ventral surface of the posterior femur with 3 to 5 hair-like setae but no definite brush. Abdomen ovoid with scattered brushes of spine-like setae. Marked sexual dimorphism, the male being much smaller than the female.

Bonomiella columbae Emerson, 1957a

Bonomiella columbae Emerson, 1957a. Florida Ent., 40: 60, figs. 1-3.

Type host: Domestic Pigeon.

Other New England host:

Zenaidura macroura (Linnaeus)--Mourning Dove.

Emerson (1957a) after examining 26 domestic pigeons, collected 9 specimens of *B. columbae*. These were from Leavenworth, Kansas. This is the only known collection of this species, to date, in the United States.

I have examined 18 domestic pigeons from Maine, Vermont, New Hampshire, and Massachusetts and have found a single female of *Bonomiella columbae* in a collection made by R. L. Blickle, Portland, Maine, Feb. 10, 1958.

The genus description will serve to identify this species.

Measurements: *Bonomiella columbae* Emerson, 1957a

Head Length	.28
Head Width	.37
Prothorax Width	.27
Pterothorax Width	.45
Abdomen Length	1.23
Abdomen Width	.87
Total Length	1.84

CICONIPHILUS

Ciconiphilus Bedford, 1939. Onderstepoort J. Vet. Sci., 12: 141.

Type species: *Colpocephalum quadripustulatum* Burmeister, 1838.

Anseriphilus Eichler, 1944b. Dtsch. Ent. Zeitr., 1943: 57.

Types species: *Colpocephalum pectiniventre* Harrison, 1916.

Head about 1/3 wider than long; anterior margin of forehead and temples rounded; ocular notch present, deep; eyes well developed; antennae 4 segmented; 2nd segment with a lateral expansion, 3rd segment narrow at base, apex large and broadly joined to the terminal segment; occipital margin concave; ocular blotches dark, well developed; occipital blotches generally reduced, internal bands between the blotches faint unlike those of *Colpocephalum*. Prothorax wider than long with acute wings; anterior 1/3 with a dorsal transverse bar. Pterothorax much wider than long; lateral margins converging anteriorly. Legs normal, femora III with combs of setae on the ventral surface. Abdomen elongate-oval with well developed tergites, pleurites and sternites; terminal abdominal segment rounded; posterolateral angle of sternite III with 2 combs of spines.

Price and Beer (1965) have recently revised this genus.

Ciconiphilus butoridiphagus Carriker, 1964.

Ciconiphilus butoridiphagus Carriker, 1964. Rev. Brasil. Biol., 24: 104, fig. 23.

Ciconiphilus melanolophi Price and Beer, 1965. Canad. Ent., 662, fig. 9.

Type host: *Butorides virescens* (Linnaeus)--Green Heron.

New England host:

Butorides virescens (Linnaeus)--Green Heron.

This species is very similar to *C. decimfasciatus* (Boisduval and Lacordaire, 1835) except for the presence of 0-3 anterior setae on female abdominal tergites II-VI, whereas in *C. decimfasciatus* there are more than 3.

Ciconiphilus decimfasciatus (Boisduval and Lacordaire, 1835)

Liotheum decimfasciatum Boisduval and Lacordaire, 1835. Faune Ent. Environs Paris: 123.

Colpocephalum importunum Denny, 1842. Mon. Anopl. Brit.: 199 and 214, pl. 18, fig. 1.

Colpocephalum nyctarde Denny, 1842. Mon. Anopl. Brit.: 199 and 215, pl. 20, fig. 9.

Colpocephalum obscurum Giebel, 1874. Insecta Epizoa: 273.

Menopon sulcatum Piaget, 1880. Les Pediculines: 485, pl. 39, fig. 7.

Colpocephalum importunum major Piaget, 1880. Les Pediculines: 549 (*nec* 519).

Colpocephalum trochioxum minor Piaget, 1885 (*nec* 1880). Les Pediculines, Supplement: 128.

Colpocephalum castaneum Piaget, 1885. Les Pediculines, Supplement: 153, pl. 16, fig. 7.

Colpocephalum laticeps Kellogg, 1896. Proc. Calif. Acad. Sci. 6: 149, pl. 12, fig. 8.

Colpocephalum veratrus Kellogg, 1910. Wiss. Ergebn, Schwed. Zool. Exped. Kilimandjaro 3 Abt. 15: 52, pl. 7, fig. 9.

Colpocephalum tamamurensis Uchida, 1926. J. Coll. Agric. Tokyo 9: 37, fig. 13.

Colpocephalum boisduvali Eichler, 1937. Sitz. Ges. Naturf. Fr. Berlin 1937: 96 (*nn* for *C. importunum major* Piaget, 1880).

Pseudocolpocephalum doriabagla Ansari, 1951. Proc. Nat. Inst. India 17: 154, fig. 11.

Ciconiphilus nyctardis hoactli Carriker, 1964. Rev. Brasil. Biol., 24: 100, figs. 11 and 12.

Ciconiphilus nyctardis violaceus Carriker, 1964. Rev. Brasil. Biol., 24: 102, figs. 13 and 14.

Ciconiphilus floridus Carriker, 1964. Rev. Brasil. Biol., 24: 104, figs. 21 and 22.

Type host: *Ardea cinerea* Linnaeus.

New England hosts:

Ardea herodias Linnaeus--Great Blue Heron.

Casmerodius albus (Linnaeus)--Common Egret.

Nycticorax nycticorax (Linnaeus)--Black-crowned Night Heron.

Botaurus lentiginosus (Rackett)--American Bittern.

This species is recognized by the presence of weakly developed occipital nodi, the subocular comb of setae preceded by only 1 or 2 medium setae, prosternum with a single pair of median setae, margin of metanotum with 10 long setae, metasternal plate with 8 to 10 setae, female without inner anal setae, male with fewer than 8 anterior setae on the majority of tergites II-VI, and female with abdominal tergites II-VI having more than 3 anterior setae.

Measurements:	♂	3♀		
Head Length	.31	.36	.33	.36
Head Width	.46	.63	.60	.58
Prothorax Width	.37	.42	.42	.41
Metathorax Width	.42	.55	.49	.52
Abdomen Length	.75	1.18	1.18	1.11
Abdomen Width	.63	.82	.76	.76
Total Length	1.26	1.86	1.74	1.80

Specimens	Host	Locality	Date	Collector
3♀, 1♂	*Ardea herodias*	Bar Harbor, Me.	IX-1-1936	A.E.B.
1♀	*Florida caerulea*	Winchester, NH	X-17-1932	L.R.Nelson (USNM)

Ciconiphilus pectiniventris (Harrison, 1916)

Menopon pectinatum Neumann, 1912 (*nec* Osborn, 1902). Arch. Parasit., Paris, 15: 368, fig. 15.

Colpocephalum pectiniventre Harrison, 1916. Parasit., 9: 53 (*nn* for *M. pectinatum* Neumann, 1912).

Colpocephalum pectiniventre parvum Blagoveshtchensky, 1948. Mag. Parasit., Leningr., 10: 269, fig. 7.

Type host: Domestic Goose.

New England hosts:

Branta canadensis (Linnaeus)--Canada Goose.

Branta bernicla (Linnaeus)--Brant.

This species is distinguished from all others of the genus by the presence of a very short seta as the 2nd seta from the margin of the metanotum and on abdominal tergite I. This species is found only on the subfamily Anserinae, the geese.

Specimens	Host	Locality	Date	Collector
1 ♂	*Branta canadensis*	Newmarket, NH	X-16-1964	--
4 ♀	*Branta bernicla*	Hampton, NH	XI-8-1964	B.Barrett

Measurements:	♂	4 ♀			
Head Length	.27	.28	.30	.28	.28
Head Width	.51	.54	.54	.52	.54
Prothorax Width	.36	.40	.40	.40	.40
Metathorax Width	.42	.49	.51	.49	.51
Abdomen Length	1.02	1.24	1.29	1.26	1.24
Abdomen Width	.58	.78	.78	*	.90
Total Length	1.71	1.95	2.04	2.02	1.95

*Abdomen ruptured along lateral margin.

COLPOCEPHALUM

Colpocephalum Nitzsch, 1818. Germar's Mag. Ent., 3: 298.
Type species: *Colpocephalum zebra* Burmeister, 1838 (By designation by the International Commission of Zoological Nomenclature).

Ferrisia Uchida, 1926. (*nec* Fullaway, 1923). J. Coll. Agri. Tokyo, 9: 43.
Type species: *Colpocephalum turbinatum* Denny, 1842.

Neocolpocephalum Ewing, 1933. J. Parasit., 20: 65 (*nn* for *Ferrisia* Uchida, 1926).

Pseudocolpocephalum Qadri, 1936. Z. Parasit., 8: 640.
Type species: *Pseudocolpocephalum uchidi* Qadri, 1936.

Allocolpocephalum Qadri, 1939. Ind. J. Ent., 1: 66.
Type species: *Colpocephalum semicinctum* Rudow, 1866 (A synonym of *Colpocephalum fregili* Denny, 1842).

Corvocephalum Conci, 1942. Boll. Soc. Ent. Ital., 74: 30.
Type species: *Colpocephalum subaequale* Burmeister, 1838 (A synonym of *Colpocephalum fregili* Denny, 1842).

Dimorphiventer Eichler, 1944b. Dtsch. Ent. Zeitr., 1943: 60.
Type species: *Colpocephalum spineum* Kellogg, 1899.

Galligogus Eichler, 1947. Ark. Zool., 39A: 10.
Type species: *Colpocephalum appendiculatum* Nitzsch, 1866.

Liothella Eichler, 1947. Ark. Zool., 39A: 15.
Type species: *Colpocephalum leptopygus* Nitzsch, 1874.

Pelecanigogus Eichler, 1949a. Boll. Soc. Ent. Ital., 79: 12.
Type species: *Colpocephalum eucarenum* Burmeister, 1838.

Galliferrisia Ansari, 1951. Proc. Nat. Inst. Sci. India, 17: 150.
Type species: *Galliferrisia tausi* Ansari, 1951.

Picusphilus Ansari, 1951. Proc. Nat. Inst. Sci. India, 17: 163.
Type species: *Cuculiphilus* (*Picusphilus*) *tirkhan* Ansari, 1951.

Gariamigogus Eichler, 1952a. Zool. Anz., 149: 76.
Type species: *Colpocephalum breve* Giebel, 1866.

Scopigogus Eichler, 1952a. Zool. Anz., 149: 77.
Type species: *Colpocephalum scopinum* Mjoberg, 1910.

Vulturigogus Eichler and Zlotorzycka, 1963. Acta Parasit. Polon., 11: 205.
Type species: *Colpocephalum kelloggi* Osborn, 1902.

Gypsigogus Eichler and Zlotorzycka, 1963. Acta Parasit. Polon., 11: 212.

Type species: *Gypsigogus novoannus* Eichler and Zlotorzycka, 1963.

Lanicephalum Zlotorzycka, 1964. Acta Parasit. Polon., 12: 187.

Type species: *Allocolpocephalum* (*Lanicephalum*) *laniidorum* Zlotorzycka, 1964. (Probably a synonym of *C. fregili* Denny, 1842).

Head with pronounced ocular emarginations; temporal lobes with square or flatly rounded, never tapering, ends. Laterodorsal margin of head with preocular notch or short, broad slit. Head with conspicuous dark brown or black sclerotized areas, 1 at each preocular notch, 1 at each proximal end of laterodorsal margin, and 1 pair on the occipital margin lined by a dark, transverse band and a lighter, transverse band to the preocular areas. Mesothorax short, length less than that of the pro- and metathorax taken together. Basal segment of each tarsus only slightly produced distally. Ventral surface of posterior femur, and some abdominal sternites, without definite patches of setae although combs of spines may be present. Mallophaga of moderate size but seldom exceeding 3 millimeters in length.

Colpocephalum brachysomum Kellogg and Chapman, 1902

Colpocephalum brachysomum Kellogg and Chapman, 1902. J. N. Y. Ent. Soc., 10: 162, pl. 14, fig. 3.

Colpocephalum discrepans Kellogg and Chapman, 1902. J. N. Y. Ent. Soc., 10: 164, pl. 15, fig. 1.

Kurodaia keleri Emerson, 1961. Proc. Biol. Soc. Wash., 74: 191, figs. 7-9.

Type host: *Asio flammeus* (Pontoppidan)--Short-eared Owl.

Other New England host:

Bubo virginianus (Gmelin)--Great Horned Owl.

This species was described from 2 ♀ from *Asio flammeus* (Pontoppidan) and 2 ♀ from *Pluvialis dominica* (Muller) - an error. *Colpocephalum discrepans* was described from 1 ♀ from *Anous stolidus* (Linnaeus) both of which are errors.

Price and Beer (1963) have reviewed the species of *Colpocephalum* infesting the Strigiformes and give the following measurements for this species:

	♂	♀
Head Length	.35	.37
Head Width	.56	.60
Prothorax Width	.38	.39
Metathorax Width	.46	.55
Total Length	1.08 (Short Form)	1.47 (Short Form)
	1.59 (Long Form)	1.84 (Long Form)

The long form is due to telescoping of the abdomen during mounting on microscope slides. The measurements are the averages of 4 males and 8 females.

Specimens	Host	Locality	Date	Collector
1 slide	*Asio flammeus*	Middletown, Conn.	XI-15-1925	O.L.Austin,Jr. (USNM)

Colpocephalum flavescens (deHaan, 1829)
Liotheum flavescens deHaan, 1829. Mem. Mus. Hist. Nat. Paris, 18: 309.
Type host: *Haliaeetus albicilla* (Linnaeus)
New England hosts:
Aquila chrysaetos (Linnaeus)--Golden Eagle.
Haliaeetus leucocephalus (Linnaeus)--Bald Eagle.

Price and Beer (1963a) in their review of the *Colpocephalum* species parasitic upon the Falconiformes, list the following features characteristic to the *flavescens* group, which includes in addition to *C. flavescens, C. napiforme* Rudow, 1869, parasitic upon *Buteo jamaicensis* (Gmelin)--Red-tailed Hawk:

1. Occipital setae all long.
2. Margin of prothorax with 5 long and 3 short setae each side.
3. Tergocentral setae with minute to short setae among much longer ones.
4. Abdominal segments of female essentially of same length.
5. Females lack anterior setae on abdominal tergites.
6. Anus of female oval, lacking inner setae (occasionally 1-2 dorsal inner setae set very close to dorsal fringe; no dorsal indentation).
7. Vulva broadly oval, without distinct lateral row of hooked setae.
8. Male abdominal tergite IX without anterior setae.

Specimens	Host	Locality	Date	Collector
2 ♀	*Haliaeetus leucocephalus*	Bar Harbor,Me.	VIII-7-1933	A.E.B.
1 slide	" "	Swan Island,Me.	XII-22-1946	M.C.Meyer (USNM)
1 slide	" "	Waltham, Mass.	XI-12-1921	R.H.Howe (USNM)
1 slide	" "	Newmarket, NH	X-6-1894	F.B.Webster (USNM)

Measurements: 2 ♀ (from Bar Harbor)

Head Length	.36	.37
Head Width	.61	.64
Prothorax Width	.40	.39
Metathorax Width	.54	.54
Total Length	1.99	2.19

Colpocephalum nanum Piaget, 1890
Colpocephalum nanum Piaget, 1890. Tijdschr. Ent., 33: 257, pl. 10, fig. 10.
Type host: Unknown.
New England hosts:
Buteo lineatus (Gmelin)--Red-shouldered Hawk.
Buteo jamaicensis (Gmelin)--Red-tailed Hawk.

Buteo lagopus (Pontoppidan)--Rough-legged Hawk.
Accipiter gentilis (Linnaeus)--Goshawk.
Accipiter cooperii (Bonaparte)--Cooper's Hawk.

Price and Beer (1963a) include this species in their *osborni*-group with 5 other species none of which are found in New England. Thus the following characteristics will serve for determining *C. nanum*:

1. Mid-dorsal head setae long.
2. Occipital setae all long.
3. Margin of prothorax with 5 long and 3 short setae on each side.
4. Abdominal tergites III-IX of ♀ usually showing faint division into 2 or 3 parts.
5. Anus of female usually indented dorsally, always with ventral and usually with dorsal inner setae.
6. Vulva flattened, with prominent lateral row of hooked spines.
7. Male genitalia without lateral posterior projections on the genital sclerite; penis barbed.

Specimens	Host	Locality	Date	Collector
7♀ , 6♂	*Accipter gentilis*	Stratton, Me.	IX-9-1965	H.Tyler
1 slide	*Buteo lagopus*	Ipswich, Mass.	X-18-1934	MCZ
1 slide	*Accipter gentilis*	Martha's Vineyard, Mass.	XI- -1927	USNM
2 ♀	" "	Plum Island, Mass.	Winter 1964-65	J.E.K.

The M. C. Z. material contained specimens with the label *Colpocephalum flavescens*. The determination was by Peters and these could be *C. nanum* Piaget, 1890.

Colpocephalum turbinatum Denny, 1842

Colpocephalum turbinatum Denny, 1842. Mon. Anopl. Brit.: 198 and 209, pl. 21, fig. 1.
Colpocephalum oxyurum Nitzsch, 1861. *In Giebel*, Z. ges. NatWiss., 17: 519.
Colpocephalum ailurum Nitzsch, 1861. *In Giebel*, Z. ges. NatWiss., 17: 522.
Colpocephalum bicinctum Nitzsch, 1861. *In Giebel*, Z. ges. NatWiss., 17: 524.
Colpocephalum tricinctum Nitzsch, 1861. *In Giebel*, Z. ges. NatWiss., 17: 524.
Colpocephllum longicaudum Nitzsch, 1866. *In Giebel*, Z. ges. NatWiss., 28: 392.
Colpocephalum caudatum Giebel, 1874. Insecta Epizoa: 261.
Colpocephalum caudatum setosum Piaget, 1880. Les Pediculines: 519.
Colpocephalum dissimile Piaget, 1880. Les Pediculines: 520.
Colpocephalum intermedium Piaget, 1880. Les Pediculines: 521 (*nn* for *C. tricinctum* Nitzsch, 1861).
Colpocephalum subflavescens Piaget, 1880. Les Pediculines: 571, pl. 48, fig. 2.
Colpocephalum dissimile major Piaget, 1885 (*nec* 1880). Les Pediculines, Supplement: 119, pl. 13, fig. 2.

Colpocephalum caudatum longipes Piaget, 1885 (*nec* 1880). Les Pediculines, Supplement: 125.
Colpocephalum latifasciatum Piaget, 1885. Les Pediculines, Supplement: 130, pl. 14, fig. 2.
Colpocephalum osborni costaricense Carriker, 1903. Univ. Stud. Nebr., 3: 172.
Colpocephalum abruptofasciatum Mjöberg, 1910. Ark. Zool. 6: 36. fig. 23.
Neocolpocephalum gypae Qadri, 1935. Zeit. Parasit., 8: 229, fig. 3.
Neocolpocephalum tricinctum wetzeli Eichler, 1941. Arch. Naturgesch., B (n. f.), 10: 374, fig. 23.
Vulturigogus eugenii Eichler and Zlotorzycka, 1963. Acta Parasit. Polon., 11: 207, fig. 4 and pl. 1, figs. 2 and 3.
Vulturigogus femellus Eichler and Zlotorzycka, 1963. Acta Parasit. Polon., 11: 209, pl. 1, fig. 4.
Type host: Domestic pigeon.
Other New England hosts:
Haliaeetus leucocephalus (Linnaeus)--Bald Eagle.
Circus cyaneus (Linnaeus)--Marsh Hawk.
Buteo jamaicensis (Gmelin)--Red-tailed Hawk.

This is the only species of *Colpocephalum* placed in the *turbinatum*-group by Price and Beer (1963a) that is found on New England Falconiformes. The characteristics of this group are:

1. Mid-dorsal head setae long.
2. All occipital setae long.
3. Margin of prothorax with 5 long and 3 short setae on each side.
4. Female with abdominal tergite II longer than tergite III and with group of long median tergocentral setae.
5. Female with tergites III-IX tripartite.
6. Anus of ♀ indented dorsally, with dorsal and ventral inner setae.
7. Vulva flattened, with pronounced lateral row of hooked setae.
8. Male genitalia with a pair of pointed latero-posterior projections on the genital sclerite; penis barbed.

Specimens	Host	Locality	Date	Collector
2 ♀ , 1 ♂	*Circus cyaneus*	--	--	UNH

Colpocephalum zerafae Ansari, 1955
Colpocephalum zerafae Ansari, 1955. Proc. VII Pak. Sci. Conf.,: 52. Also described as a new species in Ind. J. Ent., 17 (1956): 399 and Ind. J. Ent., 18 (1957): 428.
Colpocephalum falconii falconii Carriker, 1963. Mem. Soc. Cien. Nat. LaSalle, 23: 9, pl. 1b, figs. 1, 3a, and 4c.
Colpocephalum falconii caerulescens Carriker, 1963. Mem. Soc. Cien. Nat. LaSalle, 23: 11, pl. 1b, fig. 4b, pl. 4, fig. 4.
Colpocephalum falconii rufigularis Carriker, 1963. Mem. Soc. Cien. Nat. LaSalle, 23: 11, pl. 1b, fig. 2; pl. 2, fig. 2a; pl. 4, fig. 3b.

Type host: *Falco jugger* J. E. Gray.
New England hosts:
Falco sparverius Linnaeus--Sparrow Hawk.
Falco columbarius Linnaeus--Pigeon Hawk.

This is the only species in the *zerafae*-group erected by Price and Beer (1963a) found in New England.

1. Mid-dorsal head setae minute.
2. Occipital setae long.
3. Margin of prothorax with 5 long and 3 short setae each side.
4. Female with abdominal tergites all essentially same length and undivided.
5. Anus of female slightly indented dorsally, usually with both dorsal and ventral inner setae.
6. Vulva broadly rounded, with weak row of lateral hooked setae.
7. Male genitalia without latero-posterior projections on genital sclerite; penis without barbs and tapered at tip.

CUCULIPHILUS

Cuculiphilus Uchida, 1926. J. Coll. Agri. Tokyo, 9: 47.
Type species: *Pediculus fasciatus* Scopoli, 1763.
Falcophilus Guimaraes, 1942. Pap. Avulsos, Dept. Zool. S. Paulo, 2: 241.
Type species: *Menopon alternatum* Osborn, 1902.
Aegypiphilus Eichler, 1944. Dtsch. Ent. Zeitr., 1943: 56.
Type species: *Aegypiphilus gypsis* Eichler, 1944.
Vulturiphilus Eichler, 1948a. Entomologist, 81: 251 (*nn* for *Falcophilus Guimaraes*, 1942).

Laterodorsal margin of head with deep, narrow, preocular slit. Terminal segments of antennae with definite indication of division into 2. Prosternum with 2 median setae. Combs of stout setae present on venter of posterior femur. Lateral margins of tergites with or without internal sclerotic buttresses. Two or more combs of setae present on each side of median line on abdominal sternites III-IV of female and abdominal sternites III-V of male.

At the present time, there are no described species of this genus recognized as being on New England birds.

Cuculiphilus decoratum (Kellogg, 1896)
Menopon decoratum Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 526, pl. 72, fig. 2.
Type host: Unknown.

The host record given by Kellogg, *Elanus leucurus*, is an error. Emerson (1949a) changed the host record to *Coccyzus americanus occidentalis* Ridgway. Scharf and Price (1965) after studying specimens of *Cuculiphilus* from *Coccyzus americanus americanus* consider that the

members of the genus *Cuculiphilus* collected from the Yellow-billed Cuckoo, *Coccyzus americanus* (Linnaeus) are not *Cuculiphilus decoratum* (Kellogg, 1896).

I have collected 2 immature male *Cuculiphilus* sp. from a Yellow-billed Cuckoo in Durham, New Hampshire, June 1, 1964. This undescribed species is the only member of the genus known to occur on New England birds, although it is likely that with sufficient collecting a species will be found on the Black-billed Cuckoo, *Coccyzus erythropthalmus* (Wilson).

Cuculiphilus alternatus (Osborn, 1902)
Menopon alternatum Osborn, 1902. Ohio Nat., 2: 175, pl. 2, fig. 1.
Falcophilus coragypsis Eichler, 1948a. Entomologist 81: 251, figs. 1-7.
Type host: *Cathartes aura* (Linnaeus)--Turkey Vulture.
Other North American host:
Coragyps atratus (Bechstein)--Black Vulture.

Specimens	Host	Locality	Date	Collector
14♀, 7♂	*Coragyps atratus*	Lincoln, Me.	VI-17-1938	W.J.Clayton

DENNYUS

Nitzschia Denny, 1842 (*nec* Baer, 1827). Mon. Anopl. Brit.: 230.
Type species: *Nitzschia burmeisteri* Denny, 1842. (A synonym of *Pediculus hirundinis* Linnaeus, 1761).
Dennyus Neumann, 1906. Bull. Soc. Zool. Fr., 20: 60. (*nn* for *Nitzschia* Denny, 1842).
Takamatsuia Uchida, 1926. J. Coll. Agri. Tokyo, 9: 32.
Type species: *Takamatsuia major* Uchida, 1926.
Ctenodennyus Ewing, 1930. Proc. U. S. Nat. Mus., 77: 9.
Type species: *Dennyus* (*Ctenodennyus*) *spiniger* Ewing, 1930.

Shape of head characteristic; lateral margins continuous with eyes and slightly swollen above the base of the antennae. Temporal lobes somewhat expanded and quadrangular. Antennal fossae partly roofed over dorsally by expansion of the integument. Eye double, the 2 corneas appearing to be partially fused; occiput slightly concave. Prothorax rather narrow but pronotum expanded laterally into a pair of spine-bearing lobes; prosternal plate well developed with heavily sclerotized borders. Mesothorax small but usually distinct and separated from metathorax by a dorsal suture. First pair of legs short; other legs long. Femur I very short, frequently as broad as long; posterior femur very long with a patch of ventral setae. Abdomen long and quite narrow; pleurites typically with a marginal row of spines and a small tuft of long, hair-like setae. Abdominal tergites bare except for a posterior marginal row of setae. Some abdominal sternites with patches of setae about the size of those clothing the body. Genitalia of male symmetrical with long, narrow, basal plate. Parameres free, clasper-like

and not united. Penis undeveloped. Genital region of female with sternites VIII and IX fused into a single large plate; lateral margin of vulva smoothly convex with corona of fine setae.

This genus has been reviewed by Carriker (1954a) and Emerson and Pratt (1956).

Dennyus dubius (Kellogg, 1896)

Nitzschia dubius Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 540, pl. 73, fig. 6.

Type host: *Chaetura pelagica* (Linnaeus)--Chimney Swift.

Kellogg (1896) described this species from specimens collected in Kansas. It has also been reported from Massachusetts, Maryland, New York, Ohio, Pennsylvania, South Carolina, and Virginia by Peters (1936); from North Carolina by Brimley (1938); from Quebec by Whitehead (1954) and Emerson and Pratt (1956) have seen specimens of this species from Georgia, Illinois, Indiana, Maryland, Massachusetts, Mississippi, Missouri, Nebraska, New Jersey, New York, North Dakota, Oregon, Pennsylvania, South Carolina, Tennessee, and Virginia.

Specimens	Host	Locality	Date	Collector
1 slide	*Chaetura pelagica*	Liberty Hill, Conn.	V-20-?	MCZ
1 slide	" "	Newcastle, Me.	VIII-23-1948	S.C.Raven
1 slide	" "	Mt.Jefferson,Mass.	VIII-18-1871	MCZ
2 slides	" "	N.Eastham, Mass.	VIII-1-1929	O.L.Austin (USNM)
1 slide	" "	Durham, NH	VIII-2-1921	P.R.Lowry
2 ♀, 2 ♂	" "	" "	VIII-9-1964	A.C.Borror

This is the only species of the genus found in New England; therefore, the description of the genus is sufficient to determine this species.

Measurements:	2 ♂		2 ♀	
Head Length	.43	.45	.45	.45
Head Width	.69	.70	.73	.76
Prothorax	.42	.42	.45	.46
Metathorax Width	.66	.67	.76	.78
Total Length	2.26	2.34	2.85	2.93

EIDMANIELLA

Eidmaniella Keler, 1938a. Ann. Mus. Zool. Polon, 13: 81.

Type species: *Menopon brevipalpe* Piaget, 1880.

Head about twice as broad as long; laterodorsal margin of forehead with a narrow preocular slit. Pouch-like cavity between laterodorsal and lateroventral margins of preantennal region roofed over distally by

a fusion of these margins. Mandibles situated a short distance behind the anterior margin. Thorax normal; mesonotum short and separated from the metanotum. Prosternal plate with a median pointed process; prosternum with 2 median setae. Third femora with a brush of normal setae on the ventral surface. Second and 3rd tibiae with 3 spine-like setae at their apices. Abdomen elongately oval with tergal, sternal, and paratergal plates. Abdominal sternites IV-VI with brushes of normal setae, those on VI may be scattered. Male genitalia with short basal plate, narrowed anteriorly and gradually broadening toward the apex where it is strongly expanded; parameres present.

Eidmaniella brevipalpis (Piaget, 1880)
Menopon brevipalpe Piaget, 1880. Les Pediculines: 498, pl. 40, fig. 5.
Menopon sigmoidalis Picaglia, 1885. Atti. Soc. Ital. Sci. Nat., 28; 87.
Type host: *Phalacrocorax carbo* (Linnaeus)--Great Cormorant.

No collections of this bird nor any data or records of this species of Mallophaga available.

Eidmaniella pustulosa (Nitzsch, 1866)
Menopon pustulosum Nitzsch, 1866. *In Giebel*, Z. ges. NatWiss., 28: 393.
Type host: *Morus bassanus* (Linnaeus)--Gannet.

The only record found of this species in North America is by Whitehead (1954) from Quebec. I have made several collections of the Double-crested Cormorant, *Phalacrocorax auritus* (Lesson), and have taken numerous specimens of *Eidmaniella* sp. from these birds. This is an undescribed species of mallophagan which I am now in the process of determining.

EUREUM

Eureum Nitzsch, 1818. Germar's Mag. Ent., 3: 301.
Type species: *Eureum cimicoides* Burmeister, 1838. (By subsequent designation by Harrison, 1916. Parasitology, 9: 21).
Arndtiella Eichler, 1948b. Naturwissenschaftlichen Rundschau, 2: 81 (*nn* for *Eureum* Nitzsch, 1818).

Distinguishable by its large, short, robust form. Head broader than long; forehead broadly curved, temporal lobes greatly expanded and angular, occiput deeply concave. Antennae small, the fossae partly covered by the lateral expansions of the head. There is no preocular notch or slit. Eye double, the 2 corneas partly fused. Prothorax enlarged, emarginate laterally and posteriorly. Prosternal plate well developed with heavily sclerotized lateral margins and bearing numerous hair-like setae. Mesothorax short, greatly reduced and separated from metathorax by a distinct dorsal suture often times not visible in mounted specimens. Metathorax large, lateral margins expanded posteriorly. First pair of legs short; 2nd and 3rd pairs longer. Femur

I very short; posterior femur with a patch of fine setae ventrally. Abdomen broad and short, paratergal plates with a marginal row of spines and setae and a small tuft of long hair-like setae. Tergites bare except for a single transverse row of closely set setae. Sternites V, VI, and VII with a patch of fine setae at each posterolateral angle. Male genitalia symmetrical with short, wide basal plate. Parameres short, clasper-like and free, extending posteriorly beyond preputial sac. Female genital region with sternites VIII and IX fused into a single, short plate; margin of vulva convex with a corona of fine setae.

Mallophaga of the genus *Eureum* are ectoparasitic on members of the family Apodidae (Swifts) of the order Apodiformes. This genus contains about 7 species, one of which is known to occur on a host found in New England.

Eureum ewingi Eichler, 1942c

"*Eureum cimicoides* Nitzsch" Ewing, 1930 (*nec* Burmeister, 1838). Proc. U. S. Nat. Mus., No. 2843, 77: 10, figs. 5 and 7e.

Eureum ewingi Eichler, 1942c. Zool. Anz., 138: 179 (*nn* for "*Eureum cimicoides* Nitzsch" Ewing, 1930).

Type host: *Chaetura pelagica* (Linnaeus)--Chimney Swift.

No *Eureum ewingi* Eichler, 1942, were collected.

HOHORSTIELLA

Hohorstiella Eichler, 1940a. Zbl. Bakt. (I. Orig.), 145: 362.

Type species: *Menopon latum* Piaget, 1880.

Columbimenopon Ansari, 1951. Proc. Nat. Inst. Sci. India, 17: 130.

Type species: *Columbimenopon modestum* Ansari, 1951.

Medium-sized Menoponidae with general characters of head as in *Menacanthus* Neumann, 1912. Head wider than long, laterodorsal margin with deep, narrow preocular slit. Temporal lobes broadly rounded. Ventral surface of head with a pair of sclerotized, posteriorly projecting short processes, deeply colored in adult specimens and with inwardly-curved tips. Distal anterior angle of 2nd segment of antennae greatly prolonged and rounded. Pro- and pterothorax of normal size and appearance. Legs large, especially posterior pair. Abdomen elongate-oval. Some abdominal pleurites in both sexes prolonged posteriorly. Posterior femur and abdominal sternites IV-V or III-VI with scattered or thick brushes of stout setae.

Hohorstiella lata (Piaget, 1880)

Menopon latum Piaget, 1880. Les Pediculines: 457, pl. 37, fig. 1.

Type host: Domestic Pigeon.

This is the only known species of the genus found in New England. The only other possible host for this genus in this area is *Zenaidura macroura* (Linnaeus)--the Mourning Dove, however, the genus *Hohorstiella* has never been reported from it. The description of the genus will serve to place this Mallophaga to species.

Specimens	Host	Locality	Date	Collector
2 ♀, 1 ♂	Domestic Pigeon	Portland, Me.	II-10-1958	R.L.Blickle

Measurements:	♂	2 ♀	
Head Length	.36	.31	.39
Head Width	.60	.63	.69
Prothorax Width	.40	.48	.49
Pterothorax Width	.60	.65	.79
Abdomen Length	.76	1.14	1.27
Abdomen Width	.84	.79	1.20
Total Length	1.63	1.98	2.31

HOLOMENOPON

Holomenopon Eichler, 1941a. Stettin. Ent. Ztg., 102: 125.
Type species: *Menopon albofasciatum* Piaget, 1880.

Laterodorsal margin of head with preocular notch or slit. Pouch-like cavity, usually deep, between laterodorsal and lateroventral margins of head. Occiput with basal thickening passing forward to laterodorsal margins of head. Prosternum with 2 median setae; prosternal plate with deeply serrated posterior margin. Posterior femur and abdominal sternites IV-V with scattered to moderately thick brushes of normal setae; sternites III and V may also possess brushes of scattered setae.

Holomenopon clypeilargum Eichler, 1943
Holomenopon clypeilargum Eichler, 1943a. Mitt. Münch. Ent. Ges., 33: 236, figs. 3-4.
Type host: *Anas acuta* Linnaeus--Pintail.

I have no information concerning this species of Mallophaga and no records of its being collected in New England. It is included since it should be found if enough collections are made.

Holomenopon leucoxanthum (Burmeister, 1838)
Menopon leucoxanthum Burmeister, 1838. Handb. Ent., 2: 440.
Type host: *Anas crecа* Linnaeus--Common Teal.

The Common Teal is a casual visitor to New England. I have no records of *Holomenopon leucoxanthum* having been recovered from it in this area.

Holomenopon loomisii (Kellogg, 1896)
Menopon loomisii Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 162, pl. 15, fig. 6.
Type host: *Melanitta deglandi* (Bonaparte)--White-winged Scoter.

Kellogg (1896) described this species as follows:

> Head semilunar with evenly rounded front, shallow ocular emarginations, and rounded posterior angles; occipital margin concave; a small, black, ocular fleck, dark brown ocular blotch. Prothorax with produced lateral angles obtuse, bearing 2 spines and a long hair. Metathorax with divergent sides, not quite as wide as head, with flatly convex posterior margin bearing a series of long hairs. Abdomen ovate, with broad transverse bands across all segments separated by wide uncolored sutures.

Specimens	Host	Locality	Date	Collector
3 ♀, 1 ♂	*Melanitta deglandi*	Hampton, NH	XI-2-1965	B.Barrett

Measurements:	♂	♀	♀ (Kellogg Type)
Head Length	.27	.28	.30
Head Width	.52	.54	.56
Prothorax Width	.42	.43	-
Metathorax Width	.46	.52	-
Abdomen Length	.79	1.05	-
Abdomen Width	.64	.76	.84
Total Length	1.51	1.74	1.80

Holomenopon lunarium (Rudow, 1869)
Menopon lunarium Rudow, 1869. Z. ges. NatWiss., 34: 402.
Type host: *Oidemia nigra* (Linnaeus)--Common Scoter.

I have not seen the original description of this species. However, I have collected 1 ♂ and 2 ♀ *Holomenopon* from *Oidema nigra* (Linnaeus), Hampton, New Hampshire, November 20, 1963, which are probably referable to this species.

Measurements:	♂	2 ♀	
Head Length	.27	.27	.27
Head Width	.45	.54	.54
Prothorax Width	.34	.43	.40
Metathorax Width	.46	.54	.52
Abdomen Length	.88	1.26	1.14
Abdomen Width	.69	.84	.78
Total Length	1.48	1.93	1.87

Holomenopon transvaalense (Bedford, 1920)
Menopon africanum transvaalensis Bedford, 1920. Rept. Vet. Res. S. Africa, 7-8: 716.
Holomenopon maxbeireri Eichler, 1954. Mh. Vet. Med., 9: 284, figs. 1-5.
Type host: Domestic duck.

Emerson (1964) states that the type host of this species could be *Anas platyrhynchos* Linnaeus or *Cairina moschata* (Linnaeus), but believes it to be *Anas platyrhynchos*--Mallard.

Aix sponsa (Linnaeus)--Wood Duck seems to be the most common host in this area.

Specimens	Host	Locality	Date	Collector
1 slide	*Aix sponsa*	Lenox, Mass.	--	Cornell Coll.
1 slide	" "	Winchester, NH	IX-22-1934	L.R.Nelson (USNM)

KURODAIA

Kurodaia Uchida, 1926. J. Coll. Agri. Tokyo, 9: 50.
Type species: *Colpocephalum haliaetis* Denny, 1842.
Nosopoios Eichler, 1940a. Zbl. Bakt. (I. Orig.), 145: 363.
Type species: *Menopon fulvofasciatum* Piaget, 1880.
Conciella Eichler, 1949a. Boll. Soc. Ent. Ital., 79: 11.
Type species: *Colpocephalum painei* McGregor, 1912.
Ululoecus Ansari, 1951. Proc. Nat. Inst. Sci. India, 17: 160.
Type species: *Cuculiphilus (Ululoecus) panjabensis* Ansari, 1951.

Laterodorsal margins of head with deep, broad or narrow preocular slit. Preantennal region laterally sinuate, swollen above bases of antennae. Temporal lobes broadly rounded. Prothorax winged anteriorly; mesothorax narrow and separated from metathorax by dorsal suture. Legs stout; ventral surface of posterior femur with 3 or 4 combs of stout setae. Abdomen robust, elongate-oval, with greatest width at segment IV. Sternite III with 2 or more combs of 1 to 6 setae laterally. Male genitalia large and complex. Female genital region with a row of setae on posterior margin of vulva.

Kurodaia acadicae Price and Beer, 1963b
Kurodaia acadicae Price and Beer, 1963b. Ann. Ent. Soc. Amer., 56: 851, figs. 16-17.
Type host: *Aegolius acadicus* (Gmelin)--Saw-whet Owl.

Price and Beer (1963b) give the following characteristics for this species; distinctly different from all other *Kurodaia* in its head chaetotaxy. Both lateral head setae, near preocular angle, of equal length; 3 very long lateral, temporal setae, the anterior one being shorter than the other 2; dorsal seta usually near setae complex. Six to 7 metasternal setae; vulva with 16-22 marginal setae and 14-19 anterior setae. Postvulval plates each with 3-5 setae. Sternite III with 2 comb rows, the first being very weak, with one 2-4 setae.

Kurodaia flammei Price and Beer, 1963b
Kurodaia flammei Price and Beer, 1963b. Ann. Ent. Soc. Amer., 56: 851, figs. 16 and 17.
Type host: *Asio flammeus* (Pontoppidan)--Short-eared Owl.

Marginal prothoracic seta long, attaining half the length of the adjacent setae. Inner posterior setae on abdominal tergite IX usually of 3 or 4 medium setae, less often 2; all other *Kurodaia* from New England typically have only 2 setae in this position. Plates posterior to the vulva with 4-5 setae on each. Metasternum with 5-6 setae.

Kurodaia fulvofasciata (Piaget, 1880)

Menopon fulvofasciatum Piaget, 1880. Les Pediculines: 429, pl. 11, fig. 9.

Colpocephalum menoponoides Ewing, 1930. Proc. Ent. Soc. Wash., 32: 117.

Eurodaia taguatoi Eichler, 1952b. Zool. Anz., 149: 258, figs. 12-14.

Type host: *Buteo buteo* (Linnaeus).

New England hosts:

Buteo jamaicensis (Gmelin)--Red-tailed Hawk.

Buteo lagopus (Pontoppidan)--Rough-legged Hawk.

Buteo lineatus (Gmelin)--Red-shouldered Hawk.

Buteo platypterus (Viellot)--Broad-winged Hawk.

Circus cygnus (Linnaeus)--Marsh Hawk.

Haliaeetus leucocephalus (Linnaeus)--Bald-Eagle.

After examining quite a large number of hawks I must agree with Price and Beer (1963c) that aside from *Kurodaia haliaeeti*, lice of this genus are not very common on hawks.

Kurodaia haliaeeti (Denny, 1842)

Colpocephalum haliaeeti Denny, 1942. Mon. Anopl. Brit.: 199 and 216, pl. 19, fig. 1.

Colpocephalum pachygaster Giebel, 1874. Insecta Epizoa: 264.

Type host: *Pandion haliaetus* (Linnaeus)--Osprey.

Kurodaia haliaeeti is known only from the Osprey but it is by far the most common member of the genus to be found on the Falconiformes. The only Osprey examined was a study bird skin in the University of New Hampshire Collection. One male and one female *Kurodaia haliaeeti* (Denny, 1842) were taken.

Measurements:	♂	♀
Head Length	.30	.31
Head Width	.58	.63
Prothorax Width	.42	.45
Metathorax Width	.52	.58
Abdomen Length	.85	1.11
Abdomen Width	.70	.87
Total Length	1.53	1.86

Kurodaia magna Emerson, 1960a

Kurodaia magna Emerson, 1960a. Ent. News, 71: 169, figs. 1-3.

Kurodaia edwardsi Emerson, 1961. Proc. Biol. Soc. Wash., 74: 190, figs. 3-4.

Type host: *Strix varia* Barton--Barred Owl.

Other New England host:

Bubo virginianus (Gmelin)--Great Horned Owl.

Peters (1936) reports this on *Bubo virginianus* from Maine, Michigan, North Carolina, New York, South Carolina, and on *Strix varia* from South Carolina. Brimley (1938) reports it on *Bubo virginianus* from North Carolina.

Specimens	Host	Locality	Date	Collector
1 slide	*Strix varia*	Acadia Park, Me.	XI-21-1935	A.E.B.
19♀, 5♂	*Bubo virginianus*	Lincoln, Me.	Jan.-June, 1941	W.J.Clayton
5♀, 4♂	*Strix varia*	Northwood, NH	X-11-1965	A.H.Mason

Kurodia painei (McGregor, 1912)
Colpocephalum painei McGregor, 1912. Ent. News, 23: 305, fig. 1.
Type host: *Otus asio* (Linnaeus)--Screech Owl.

McGregor (1912) described this species from several specimens collected in Dallas, Texas. It has been reported, Peters (1936) from Washington, D. C., and Judd (1953) from Ontario.

Measurements of Type Male:

Head Length	.39
Head Width	.53
Abdomen Length	.75
Abdomen Width	.57
Total Length	1.30

MACHAERILAEMUS

Machaerilaemus Harrison, 1915. Parasitology, 7: 389.
Type species: *Machaerilaemus latifrons* Harrison, 1915.
Hirundoecus Ewing, 1930. Proc. U. S. Nat. Mus., 77: 12.
Type species: *Hirundoecus americanus* Ewing, 1930.

Menoponidae with head more than twice as broad as long and without a preocular notch or slit; temporal lobes reduced, rounded; gular plate large, squarish with or without a central perforation and lateral processes. Prosternal plate well developed with more than 2 median setae; 3rd femora and all of the abdominal sternites without combs of setae but 1 or more spine-like setae may be present laterally on abdominal sternites.

Machaerilaemus americanus (Ewing, 1930)
Hirundoecus americanus Ewing, 1930. Proc. U. S. Nat. Mus., 77: art. 20: 13, fig. 6 and 7f.
Type host: *Progne subis* (Linnaeus)--Purple Martin.

Described from a single female collected from the type host in New Mexico, May 25, 1927, by H. H. Kimball. This one specimen, as far as is known, is the only collection ever made of this species. The fact that the genus *Machaerilaemus* is quite rare and that the Purple Martin is an

uncommon bird in New England makes it highly unlikely that this species will ever be collected here.

Machaerilaemus complexus Malcomson, 1937

Machaerilaemus complexus Malcomson, 1937. Ann. Ent. Soc. Amer., 30: 53, figs. 1-2.
Type host: *Spizella pusilla* (Wilson)--Field Sparrow.

This species is separated from the remaining members of the genus by the presence of a circular opening in the center of the gular plate and by the absence of a caudally pointing process on the same plate.

Described from 4 females and 2 males collected from the type host in Pennsylvania. This is the only known collection of this species.

Machaerilaemus maestus (Kellogg and Chapman, 1899)

Menopon maestum Kellogg and Chapman, 1899. Occ. Pap. Calif. Acad. Sci., 6: 130, pl. 9, fig. 2.
Type host: *Zonotrichia atricapilla* (Gmelin)--Golden-crowned Sparrow.

M. maestus has a gular plate without an opening and with more than 4 setae on each of its lateral margins and a metasternal plate with a short seta at each posterolateral angle.

In addition to the type host, Emerson (1947) reports this species from *Pipilo erythrophthalmus* (Gmelin)--Rufous-sided Towhee, in Ohio, New Hampshire, New York, and South Carolina; from *Junco oreganis* (Townsend)--Oregon Junco, in Oregon; from *Pooecetes gramineus* (Gmelin)--Vesper Sparrow, in Michigan; from *Junco hyemalis* (Linn.)--Slate-colored Junco, in New Hampshire; from *Zonotrichia albicollis* (Gmelin)--White-throated Sparrow, in South Carolina; and from *Melospiza melodia* (Wilson) --Song Sparrow, in New Hampshire. Since that time *Machaerilaemus melospizae* Emerson, 1954, has been described which may now include some of the above records.

Specimens	Host	Locality	Date	Collector
1 slide	*Pipilo erythrophthalmus*	Durham, NH	IV-28-1948	E.O.Hooghkirk
1 slide	*Junco hyemalis*	Westmoreland,NH	IV-13-1933	L.O.Shelley (USNM)

For material from the Song Sparrow see under *Machaerilaemus melospizae* Emerson, 1954.

I have collected a single female *M. maestus* from the Blue Jay, *Cyanocitta cristata* (Linnaeus), Durham, New Hampshire, August 2, 1964. This appears to be a new host record for this species of Mallophaga.

Machaerilaemus malleus (Burmeister, 1838)

Eureum malleus Burmeister, 1838. Handb. Ent., 2: 441.
Type host: *Hirundo rustica* Linnaeus--Barn Swallow.

Kellogg and Chapman (1899) reported this species from a Cliff Swallow in California and Paine (1914) has collected a single female from the same location and host. These are the only published records of this mallophagan species in the United States.

The Barn Swallow is a very common bird in New England and sufficient collecting will probably reveal this louse.

Machaerilaemus melospizae Emerson, 1954

Machaerilaemus melospizae Emerson, 1954. J. Kansas Ent. Soc., 27: 45, fig. 1.

Type host: *Melospiza melodia* (Wilson)--Song Sparrow.

This species is similar to *M. maestus* (Kellogg and Chapman, 1899) but can be separated from it by the fact that *M. melospizae* has a metasternal plate with a long seta at each postero-lateral angle.

The USNM Collection contains a slide of this species collected at Westmoreland, New Hampshire, by L. O. Shelley, April 13, 1933. This appears to be the only collection of this species in New England.

MENACANTHUS

Menacanthus Neumann, 1912. Arch. Parasit., 15: 353.

Type species: *Menopon robustum* Kellogg, 1896.

Neumannia Uchida, 1926. (*nec* Trouessart, 1888). J. Coll. Agri. Tokyo, 9: 27.

Type species: *Neumannia okadai* Uchida, 1926.

Eomenacanthus Uchida, 1926. J. Coll. Agri. Tokyo, 9: 30.

Type species: *Menopon biseriatum* Piaget, 1880. (A synonym of *Menopon stramineum* Nitzsch, 1818).

Uchida Ewing, 1930b. Proc. Biol. Soc. Wash., 43: 125. (*nn* for *Neumannia* Uchida, 1926).

Zemiodes Eichler, 1944a. Z. hyg. Zool., 35: 172.

Type species: *Zemiodes zumpti* Eichler, 1944a. (A synonym of *Menopon stramineum* Nitzsch, 1818).

Species referable to this genus are similar in size, shape and appearance to those of the genus *Menopon* Nitzsch, 1818. In *Menacanthus* the anteroventral surface of the head bears a pair of large, spine-like processes directed backward and downward. Posterior femur with or without patches of setae on the ventral surface. Abdomen elongate-oval, that of female wider and more robust than that of male. Abdominal sternites either with brushes or marginal spine-like setae at postero-ventral angles prolonged posteriorly. Male genitalia with large basal plate; parameres free with tips turned outward apically. Clay (1938) hesitated to give generic characters because the genus needs considerably more detailed study.

Menacanthus alaskensis (Kellogg and Chapman, 1902)
Menopon alaskensis Kellogg and Chapman, 1902. J. N. Y. Ent. Soc., 10: 27, pl. 3, fig. 5.
Type host: *Pinicola enucleator* (Linnaeus)--Pine Grosbeak.

Described from many specimens collected from *Pinicola enucleator*, Kadiak Island, Alaska.

Measurements: ♀

Head Length	.30
Head Width	.45
Abdomen Width	.60
Total Length	1.60

Specimens	Host	Locality	Date	Collector
18♀, 6♂	*Pinicola enucleator*	Bar Harbor, Me.	I-9-1940	A.E.B.

Menacanthus aurocapillus Carriker, 1958
Menacanthus aurocapillus Carriker, 1958. Proc. Ent. Soc. Wash., 60: 172, fig. 6-8.
Type host: *Seiurus aurocapillus* (Linnaeus)--Ovenbird.

The types were collected at Fort Meade, Anne Arundel County, Maryland, July 21, 1955. Carriker (1958) states that this species is an unusual member of the genus *Menacanthus*, resembling in some ways, especially the shape of the head, the genus *Machaerilaemus*. The ventral head spines are poorly chitinized and are set at an unusual distance behind the bases of the mandibles.

Specimens	Host	Locality	Date	Collector
3♀, 2♂	*Seiurus aurocapillus*	Durham, NH	VIII-4-1965	P.Sawyer

Menacanthus annulatus (Giebel, 1874)
Menopon annulatum Giebel, 1874. Insecta Epizoa: 285.
Type host: *Passer domesticus* (Linnaeus)--House Sparrow.

The only report I have of this species is Judd (1953).

Menacanthus camelinus (Nitzsch, 1874)
Menopon camelinum Nitzsch, 1874. *In Giebel*, Insecta Epizoa: 288, pl. 15, fig. 3.
Menacanthus dudiyalatora Ansari, 1951. Proc. Nat. Inst. Sci. India, 17: 143, figs. 7 a-k.
Type host: *Lanius excubitor* Linnaeus--Northern Shrike.

I have not seen the original description of this species but Ansari (1951) gives the following description: Female - Head broad slightly less than twice as broad as long; front rounded, 2 short hairs on each side of meson; lateral margins with a small and 3 long hairs; ocular slit distinct; temples swollen, occipital margin slightly concave; gular

plate quadrate, each side with 4 long hairs, the posterior one being the longest. Prothorax large, lateral angles each with a spine and a long hair; lateral margin slightly convex, each bearing a spine and a long hair; posterior margin nearly straight, bearing 3 long hairs on each half. Mesothorax reduced; metathorax short, broader than prothorax, posterior angle with 2 spines; posterior margin almost straight, bearing 5 long hairs and a spine on each half. Abdomen broadly elliptical, widest at segment IV-V. Male similar to female but smaller.

Menacanthus chrysophaeus (Kellogg, 1896)
Colpocephalum chrysophaeum Kellogg, 1896. Proc. Calif. Acad. Sci. 6: 520, pl. 71, fig. 1.
Type host: *Melospiza melodia* (Wilson)--Song Sparrow.

Measurements of Kellogg's specimens:

	♂	♀
Head Length	.25	.28
Head Width	.40	.50
Abdomen Width	.50	.70
Total Length	1.09	1.35

This is the most common mallophagan collected from the Song Sparrow.

Specimens	Host	Locality	Date	Collector
1 ♀	*Melospiza melodia*	Cape Cod, Mass.	--	C.M.Herman
1 slide	" "	Groton, Mass.	IV-8-1938	W.P.Wharton (USNM)
1 slide	" "	" "	IV-10-1938	" " "
1 slide	" "	" "	IV-13-1938	" " "
1 ♀	" "	Taunton, Mass.	V-17-1938	K.E.Hyland
5 ♀, 1 ♂	" "	Durham, NH	V-31-1948	E.O.Hooghkirk
1 slide	" "	Peterboro, NH	IV-10-1933	C.L.Whittle (USNM)
9 ♀, 8 ♂	" "	Weare, NH	IV-13-1964	J.E.K.
1 slide	" "	Westmoreland,NH	IV-4-1931	L.O.Shelley (USNM)
1 ♀	" "	" "	IV-1-1935	" " "
1 slide	" "	Wells River, Vt.	IV-10-1935	W.P.Smith (USNM)

Menacanthus colaptis (Durrant, 1908)
Menopon colaptis Durrant, 1908. Ohio Nat., 8: 355, fig. 1h.
Type host: *Colaptes auratus* (Linnaeus)--Yellow-shafted Flicker.

Described from 12 specimens collected at Columbus, Ohio. Peters (1936) reports this species from New Hampshire and Virginia, and Whitehead (1954) reports it from Quebec.

Measurements of Durrant's specimens:

	♂	♀
Head Length	.27	.27
Head Width	.59	.58
Abdomen Width	.78	.74
Total Length	1.54	1.82

Specimens	Host	Locality	Date	Collector
8 ♀, 3 ♂	*Colaptes auratus*	Bartlett, NH	IX-25-1964	J.E.K.
1 ♀, 4 ♂	" "	Dover, NH	IX-18-1964	J.E.K.
1 ♀, 2 ♂	" "	Lee, NH	X-4-1964	J.E.K.

Menacanthus cornutus (Schommer, 1913)
Menopon cornutum Schommer, 1913. Uber die Mallophagen: 64 and 71, pl. 7, fig. 29.
Type host: Chicken.
Menacanthus pallidulus (Neumann, 1912)
Menopon pallidulum Neumann, 1912. Arch. Parasit., 15: 361, figs. 7-9.
Type host: Chicken.

These 2 species from the chicken are mentioned together because I have no data on either mallophagan. I did no active collecting of ectoparasites of domestic birds and have collected neither of these species. Both of these may have been taken on Old World Galliformes and are much less common on chickens than *Menacanthus stramineus* (Nitzsch, 1818). Emerson (1956) was the first to report *M. cornutus* from the United States.

Menacanthus expansus (Osborn, 1896)
Menopon expansum Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 245, pl. 2, fig. j.
Type host: *Dolychonyx oryzivorus* (Linnaeus)--Bobolink.

Osborn (1896) describes *Menacanthus expansus* as follows:

> Abdomen very broad, ovate. Head with sinuous margin and very deeply emarginate occiput; orbital sinus entirely covered; temporal lobes with 2 long bristles and 2 or 3 short hairs; prothorax nearly as broad as head and closely fitting into the occipital cavity, the lateral angles in contact with temporal lobes; posterior margin semicircular; metathorax short, rounded in front, with 2 bristles at the lateral angles; legs robust, femora very large, irregularly set with short hairs; abdomen nearly as broad as long, uniformly yellowish brown, margins of segments above with a closely set series of hairs which are longer at the lateral angles posteriorly, and the entire ventral surface irregularly set with short hairs arising from minute clear pustules.
>
> Length, 1.31; head, 0.18; abdomen, 0.80
> Width, head, 0.47; abdomen, 0.80.

Menacanthus meniscus (Piaget, 1880)

Menopon meniscus Piaget, 1880. Les Pediculines: 447, pl. 36, fig. 7.

Type host: *Calcarius lapponicus* (Linnaeus)--Lapland Longspur.

No information concerning this species in New England is available.

Menacanthus mutabilis Blagoveshtschensky, 1940

Menacanthus mutabilis Blagoveshtschensky, 1940. Mag. Parasit., Leningr., 8: 31 and 78, fig. 5.

Menacanthus himalayicus Ansari, 1951. Proc. Nat. Inst. Sci. India, 17: 148, figs. 9a-f.

Menacanthus hopkinsi Eichler, 1953b. Beitrage zur Vogelkunde, 3: 172 (*nn* for *M. mutabilis* Blagoveshtschensky, 1940).

Type host: *Sturnus vulgaris* Linnaeus--Starling.

During the course of this study, I have made 61 collections of *Sturnus vulgaris* and have found 1 Amblyceran *(Menacanthus mutabilis)* and 1 Ischnoceran (*Bruelia nebulosa*) to commonly infest this bird. The Starling is the host also for *Myrsidea cucullaris* and *Sturnidoecus sturni*, however, I have not been able to find either of these species. I have collected both *Menacanthus mutabilis* and *Bruelia nebulosa* off the same bird in 6 of 61 collections with *Bruelia* always being the more numerous.

Measurements: *Menacanthus mutabilis*, 5 ♂

Head Width	.48	.48	.48	.48	.46
Prothorax Width	.37	.37	.37	.37	.34
Total Length	1.54	1.51	1.45	1.47	1.36

Measurements: *Menacanthus mutabilis*, 5 ♀

Head Width	.57	.55	.48	.57	.55
Prothorax Width	.43	.45	.37	.43	.43
Total Length	1.90	1.80	1.41	1.92	2.07

Menacanthus perforatus (Piaget, 1880)

Menopon perforatum Piaget, 1880. Les Pediculines: 453, pl. 42, fig. 9.

Type host: *Eremophila alpestris* (Linnaeus)--Horned Lark.

The Horned Lark is not a common bird in New England and I could find no published reports of this species being collected in the United States.

Menacanthus stramineus (Nitzsch, 1818)

Pediculus meleagridis Panzer, 1793. (*nec* Linnaeus, 1758). Faun. Ins. Germ.: 51, fig. 20.

Menopon stramineum Nitzsch, 1818. Germar's Mag. Ent., 3: 300 (*nn* for *P. meleagridis* Panzer, 1793).

Menopon biseriatum Piaget, 1880. Les Pediculines: 469, pl. 37, fig. 2.

Zemiodes zumpti Eichler, 1944. Z. hyg. Zool., 35: 172, fig. 1.
Type host: *Meleagris gallopavo* Linnaeus--Turkey.
Other New England host:
Domestic Chicken.

This is the common "chicken body louse" which infests chickens, turkeys, and often times pheasants and Ruffed Grouse when they are raised in association with chickens.

As mentioned previously, I did not actively collect Mallophaga from chickens but the University of New Hampshire has several specimens of this species from the chicken.

Durham, N. H.	Jan. 31, 1922	P. R. Lowry
Durham, N. H.	Jan. 27, 1944	G. L. Walker
Durham, N. H.	May 1, 1948	A. C. Corbett
Durham, N. H.	Sept. ? 1952	R. L. Blickle
Durham, N. H.	Dec. 9, 1957	Coll. ?
Piermont, N. H.	Jan. 8, 1964	Coll. ?

Emerson (1956a) uses the following key to differentiate the three species of *Menacanthus* parasitic upon chickens.

1. Abdominal tergites III-VII each with two transverse rows of setae----------2
   Abdominal tergites III-VII each with one transverse row of setae----------*Menacanthus pallidulus*

2. More than 2 mm in length. Numerous short setae scattered on dorsum of meso-metathorax----------*Menacanthus stramineus*
   Less than 2 mm in length. Dorsum of meso-metathorax with a few short setae on the lateral margins---------*Menacanthus cornutus*

Menacanthus tenuifrons Blagoveschtchensky, 1940
Menacanthus tenuifrons Blagoveschtchensky, 1940. Mag. Parasit., Leningr., 8: 37, and 81, fig. 10.
Type host: *Troglodytes troglodytes* (Linnaeus)--Winter Wren.

No information concerning this species in New England is available.

MENOPON

Menopon Nitzsch, 1818. Germar's Mag. Ent., 3: 299.
Type species: *Menopon gallinae* Linnaeus, 1758. (By subsequent designation by Johnston and Harrison, 1911, Proc. Linn. Soc. N. S. W., 36: 327).

Head wider across rounded temporal lobes; laterodorsal margin with or without narrow preocular slit. Antennal fossae covered above by lateral expansions of margin of head. Forehead without ventral spine-like processes. Antennae short, first 2 segments truncated, conical;

2nd segment rarely with a short appendage; 3rd segment usually pediculated and goblet-shaped, receiving the spherical, ovoid or cylindrical 4th segment which is invariably the largest. Prothorax distinct, smaller than head; mesothorax fused with metathorax. Legs long, ventral surface of posterior femur and abdominal sternite IV with thick brushes of small setae. Sternite V may have indefinite brushes of 3 to 6 setae. Abdomen with internal pleural thickening. Individuals interested in this genus should consult the works of Ferris (1924), who revised the family Menoponidae, and Emerson (1954a), who reviewed the known species of the genus.

The only member of this genus found in New England is *Menopon gallinae* (Linnaeus), the "shaft louse" of chickens. Collections of this species are numerous.

MYRSIDEA

Myrsidea Waterston, 1915a. Ent. Mon. Mag., 51: 12.
Type species: *Myrsidea victrix* Waterston, 1915a.
Acolpocephalum Ewing, 1927. J. Wash. Acad. Sci., 17: 88.
Type species: *Acolpocephalum brevipes* Ewing, 1927.
Australmenopon Conci, 1942. Boll. Soc. Ent. Ital., 74: 30.
Type species: *Menopon cinerea* Thompson, 1939.
Allomyrsidea Conci, 1942. Boll. Soc. Ent. Ital., 74: 31.
Type species: *Myrsidea struthidea* Thompson, 1939.
Corvomenopon Conci, 1942. Boll. Soc. Ent. Ital., 74: 31.
Type species: *Menopon robsoni* Cummings, 1914.
Ramphasticola Carriker, 1949. Rev. Brasil. Biol. 9: 305.
Type species: *Ramphasticola hirsuta* Carriker, 1949.
Alcediniphilus Ansari, 1951. Proc. Nat. Inst. Sci. India, 18: 189.
Type species: *Myrsidea (Alcediniphilus) kuluensis* Ansari, 1951.
Myrsidella Eichler, 1951a. Zool. Anz., 146: 49.
Type species: *Menopon consimilis* Piaget, 1885.
Densidea Zlotorzycka, 1964. Acta Parasit. Polon., 12: 171.
Type species: *Menopon rustica* Giebel, 1874.
Vulgidea Zlotorzycka, 1964. Acta Parasit. Polon., 12: 172.
Type species: *Menopon cucullaris* Nitzsch, 1818. (*nn* for Redi's "Pollino del Storno bianco").
Liquidea Zlotorzycka, 1964. Acta Parasit. Polon., 12: 173.
Type species: *Liquidea proterva* Zlotorzycka, 1964.
Lanimenopon Zlotorzycka, 1964. Acta Parasit. Polon., 12: 177.
Type species: *Lanimenopon abhorrens* Zlotorzycka, 1964.
Eichlerinopon Zlotorzycka, 1964. Acta Parasit. Polon., 12: 179.
Type species: *Eichlerinopon celeripes* Zlotorzycka, 1964.
Neomyrsidella Zlotorzycka, 1964. Acta Parasit. Polon., 12: 182.
Type species: *Neomyriidella usitata* Zlotorzycka, 1964.

Head broader than long, forehead rounded, temporal lobes prominent with anterior margins set at nearly right angles to the longitudinal axis of the body. Gular and prosternal plates well developed. Thorax distinctly 3-segmented; metathorax frequently modified and produced posteriorly. Both sexes with a group of long, stout or spine-like

setae on each posterolateral angle of enlarged abdominal sternite II. Posterior femur and abdominal sternites with or without brushes of setae ventrally. Male genitalia with basal plate moderately long, continuous distally with a broad, rounded lamina at base of which are affixed stout, apically incurved parameres. In size and outward appearance this genus is similar to *Dennyus* Neumann, 1906. Throughout the genus there is, according to Ferris (1916), an inherent tendency to vary.

This is one of the largest genera of the Menoponidae. It contains 87 described species, 14 of which have been reported from birds known to occur in New England. Members of this genus are ectoparasites of birds belonging to the order Passeriformes.

Myrsidea cucullaris (Nitzsch, 1818)

Menopon cucullare Nitzsch, 1818. Germar's Mag. Ent., 3: 300 (*nn* for Redi's "Pollino del Storno Bianco").

Type host: *Sturnus vulgaris* Linnaeus--Starling.

There is a figure of the female and a photograph of the male in Clay and Hopkins (1960).

Myrsidea emersoni Clay, 1966

Myrsidea emersoni Clay, 1966. Bull. Brit. Mus. (N. H.), Ent., 17: 346, figs. 28 and 65.

Type host: *Turdus migratorius* Linnaeus--Robin.

Similar to *M. incerta* (Kellogg, 1896) in having tergite I unmodified but it may be separated from *incerta* by tergites II and III which are produced posteriorly. Pronotum usually with 6 long setae on the posterior margin. Sternite III with 1-3 anterior median setae. Female with 2 short and fine posterior setae of tergite IX. In the male the tergocentral setae of VIII are long, extending beyond the end of the abdomen. The distance from the base of these setae to the end of the abdomen is approximately the same as the distance they extend beyond the end of the abdomen.

Myrsidea incerta (Kellogg, 1896)

Menopon incertum Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 533, pl. 73, fig. 2.

Myrsidea scabrei Ansari, 1956b. Pakistan J. Health 5: 167, figs. 4a-e.

Type host: *Hylocichla ustulata* (Nuttall)--Swainson's Thrush.

Kellogg described the type from a collection made in California. Other reports of this species, all from the Hermit Thrush, are Geist (1931) from Ohio; Stanford (1932) from Utah; Peters (1936) from Alabama, North Carolina, and New York; and Brimley (1938) from North Carolina.

Specimens	Host	Locality	Date	Collector
6 ♀, 1♂, 1 imm.	*Hylocichla ustulata*	Bar Harbor, Me.	VI-1-1938	A.E.B.
1 slide	*Spinus tristis*	Cambridge, Mass.	IV-29-1915	G.K.Noble (MCZ Coll.)

Measurements:	♂	♂ (Kellogg)	♀	♀ (Kellogg)
Head Length	.27	.28	.28	.31
Head Width	.39	.44	.43	.44
Prothorax Width	.24	--	--	--
Metathorax Width	.34	--	.42	--
Abdomen Width	.42	.48	.58	.50
Total Length	1.21	1.16	1.50	1.34

Myrsidea interrupta (Osborn, 1896)

Menopon inturruptum Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.) 5: 245, pl. 2, fig. h.

Menopon mesoleucum americanum Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 539, pl. 73, fig. 3.

Type host: *Corus brachyrhynchos* (Brehm)--Common Crow.

This species may be recognized by the female's having the metathorax produced and curving back over the dorsum of the abdomen whereas in the male the metathorax is straight. The abdominal blotches of the first 3 segments in the female are broken and interrupted, in the male they are complete.

This species is common and has been reported from Iowa, Kansas, California, Ohio, Maryland, North Carolina, South Carolina, New York, and Washington, D. C.

Specimens	Host	Locality	Date	Collector
1 slide	*Corvus brachyrhynchos*	Middletown,Conn.	XI-6-1925	O.L.Austin,Jr. (USNM)
--	" "	Mt. Carmel, Conn.	III-28-1943	G.H.Plumb
--	" "	N. Haven, Conn.	III-27-1937	G.H.Plumb
1 slide	" "	Edgartown, Mass.	VI-30-1930	H.K.Gouk,Jr. (USNM)
1 slide	" "	Durham, NH	II-?-1948	E.O.Hooghkirk
1 slide	" "	Hanover, NH	--	Cornell Univ.
10♀, 3 ♂	" "	Lee, NH	IX-7-1964	G.L.Walker
3 ♀	" "	Wakefield, NH	IX-14-1964	G.L.Walker

Myrsidea latifrons (Carriker, 1910)

Nitzschia latifrons Carriker, 1910. *In Carriker and Shull*, Ent. News, 21: 56, pl. 5, fig. 4.

Nitzschia piageti Kistiakowsky, 1926 (*nec* Harrison, 1916). Zool. Anz., 68: 11, fig. 2.

Type host: *Riparia riparia* (Linnaeus)--Bank Swallow.

Described by Carriker from a collection in Michigan. This species has also been reported by Peters (1928) from Ohio and Peters (1936) from South Carolina.

Measurements:	♂ (Carriker Type)	♀
Head Length	.32	--
Head Width	.43	--
Abdomen Width	.53	.62
Total Length	1.45	1.60

Specimens	Host	Locality	Date	Collector
5♀, 2 imm.	*Riparia riparia*	Passadumkeag,Me.	VI-16-1938	A.E.B.
1♂, 3 imm.	" "	Kingston, RI	VII-18-1962	A.Hawkes

The species from Rhode Island was probably *latifrons* but the material was unmounted making a positive identification very difficult. *Myrsidea latifrons* (Carriker, 1910) is the only known amblyceran infesting this species of bird.

Myrsidea major (Piaget, 1880)

Menopon quadrafasciatum major Piaget, 1880. Les Pediculines: 441.

Type host: *Plectrophenax nivalis* (Linnaeus)--Snow Bunting.

I can find no records of this species having been collected in the United States.

Myrsidea melanorum (Kellogg, 1896)

Menopon melanorum Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 532, pl. 73, fig. 1.

Type species: *Plectrophenax nivalis* (Linnaeus)--Rufous-sided Towhee.

Kellogg described this species from a collection made in Kansas. Peters (1936) records it from Alabama, Florida, New York, South Carolina, and Virginia.

Female--Body, length 1.37 mm, width .56 mm; pale golden brown, with a black occipital margin to head. Head length .31 mm, width .47 mm, front rounded, temples broad, rounded, occipital margin concave, straight in middle, with 2 rather long and 2 short hairs. Prothorax with slightly produced blunt lateral angles bearing 3 spines; nearly straight posterior margin with 4 rather long hairs. Metathorax with slight lateral emargination, a spine and a very long hair in the posterior angles and 8 weak hairs along the posterior margin. Abdomen short, broad, ovate; a single very long hair and a spine in posterior angles of segments (Kellogg, 1896).

Myrsidea palloris (Carriker, 1903)

Menopon palloris Carriker, 1903. Univ Stud. Nebr., 3: 189, pl. 8, fig. 3.

Type host: *Stelgidopteryx ruficollis* (Vieillot)--Rough-winged Swallow.

I have no data on this species of *Myrsidea*.

Myrsidea pricei Clay, 1966

Myrsidea pricei Clay, 1966. Bull. Brit. Mus. (N. H.), Ent., 17: 351, figs. 31 and 49.

Type host: *Hylocichla guttata* (Pallas)--Hermit Thrush.

This species is very similar to *M. incerta* but generally individuals tend to be slightly larger and can be separated by the first 2 tergites convex and produced posteriorly. The outer tergocentral setae of VII and VIII in the male are half the length of those in *M. incerta* and the setae of pleurite VIII are longer.

Specimens	Host	Locality	Date	Collector
1 ♀	*Hylocichla guttata*	Albany, NH	VIII-4-1964	J.E.K.

Myrsidea quadrifasciata (Piaget, 1880)

Menopon quadrifasciatum Piaget, 1880. Les Pediculines: 440, pl. 35, fig. 6.

Type host: *Passer domesticus* (Linnaeus)--House Sparrow.

I could find no records of this species being collected in the United States.

Myrsidea quadrimaculata (Carriker, 1902)

Colpocephalum quadrimaculatum Carriker, 1902. J. N. Y. Ent. Soc., 10: 223, pl. 21, fig. 4.

Type host: *Loxia curvirostra* Linnaeus--Red Crossbill.

Described from a single male collected in Nebraska in 1901. There appear to be no published records of its collection in the United States since that time. Carriker (1902) says that it is readily recognized by the bold blackish bands on the ventral surface of the thorax, which show nearly as plainly from above as below.

Measurements of Type Male:

Head Length	.27
Head Width	.41
Abdomen Width	.49
Total Length	1.17

Myrsidea ridulosa (Kellogg and Chapman, 1899)

Menopon ridulosum Kellogg and Chapman, 1899. Occ. Pap, Calif. Acad. Sci., 6: 135, pl. 9, fig. 4.

Type host: *Dendroica petechia* (Linnaeus)--Yellow Warbler.

The species was described from specimens collected in California. The only other record is from Utah, Stanford, 1932.

Myrsidea rustica (Giebel, 1874)

Menopon rusticum Giebel, 1874. Insecta Epizoa: 288.

Nitzschia femuralis Kistiakowsky, 1926. Zool. Anz., 68: 10, fig. 1.

Type host: *Hirundo rustica* Linnaeus--Barn Swallow.

This is a common species of Mallophaga and it is often found on the Barn Swallow. Osborn (1896) reports it from Iowa, Geist (1931) from Ohio, Peters (1936) from Vermont and Emerson (1940) records it from Oklahoma.

Specimens	Host	Locality	Date	Collector
1 slide	*Hirundo rustica*	Groton, Mass.	VI-14-1938	? (USNM)
2 ♀, 1♂,				
1 imm.	" "	Albany, NH	IV-15-1964	J.E.K.
1 imm.	" "	Portsmouth, NH	VI-23-1965	B.Barrett

Measurements:	♂	2 ♀	
Head Length	.30	.30	.33
Head Width	.45	.48	.46
Prothorax Width	.30	.30	.28
Metathorax Width	.42	.45	.45
Abdomen Width	.73	.93	1.03
Total Length	1.38	1.60	1.75

Myrsidea troglodyti (Denny, 1842)
Menopon troglodyti Denny, 1842. Mon. Anopl. Brit.: 220 and 201, pl. 18, fig. 7.
Type host: *Troglodytes troglodytes* (Linnaeus)--Winter Wren.

I have found no published records of the collection of this species of *Myrsidea* in the United States.

PIAGETIELLA

Tetrophthalmus Grosse, 1885 (*nec* Hope, 1845). Z. wiss. Zool., 42: 534.
Type species: *Tetrophthalmus chilensis* Grosse, 1885
(A synonym of *Piagetiella bursaepelecani* (Perry, 1876).
Piagetia Picaglia, 1884 (*nec* Ritsema, 1874). Atti. Soc. Nat. Hist. Modena, 2: 104.
Type species: *Piagetia ragazzii* Picaglia, 1884
(By subsequent designation by Harrison, 1916, Parasitology, 9: 24).
Piagetiella Neumann, 1906. Bull. Soc. Zool. Fr., 20: 60 (*nn* for *Piagetia* Picaglia).

Head broader than long, laterodorsal margin with deep, narrow preocular slit. Temporal lobes very much expanded and rounded. Antennae lying in spherical excavations of dorsal margins of head, partly covered by laterodorsal margins. Gular and prosternal plates well developed. Prosternum with more than 2 median setae. Abdomen narrow, very elongate, sternite III with 2 or more combs, sternite IV with or without combs. These are large Mallophaga; males range from 3.8 to 5 millimeters in length.

Members of this genus inhabit the inside of the pouch of pelicans and cormorants. In New England, at present, there are no described species from the Great Cormorant or the Double-crested Cormorant, the only hosts for this genus found in this area.

PSEUDOMENOPON

Pseudomenopon Mjöberg, 1910. Ark. Zool., 6: 50.
Type species: *Menopon tridens* Burmeister, 1838
(A synonym of *Pseudomenopon pilosum* (Scopoli, 1763).

Head broad, triangular in outline, frons broadly rounded, and with or without a pair of ventral sclerotized processes arising near base of palpi. This genus is readily recognized by the large, usually heavily sclerotized, tripartite gular plate. Prothorax short; pterothorax longer and wider than prothorax, with straight, divergent sides and straight to strongly convex posterior margins. Abdomen short, that of male usually near-oval, female with sides of abdomen usually parallel. Abdominal pleurites with posteroventral angles prolonged posteriorly as pointed processes. Posterior femur and sternites III-V or VI with small scattered brushes of normal setae. Typical adult specimens of this genus average 1.75 to 2mm in total length.

Pseudomenopon insolens (Kellogg, 1896)
Menopon tridens insolens Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 166, pl. 15, figs. 3 and 4.
Type host: *Podiceps caspicus* (Hablizl)--Eared Grebe.
This may be an error and the type host may be *Fulica americana* Gmelin--American Coot.

Pseudomenopon par (Kellogg, 1896)
Menopon tridens par Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 166.
Type host: *Aechmophorus occidentalis* (Lawrence)--Western Grebe.
This may be an error and the type host may be *Fulica americana* Gmelin--American Coot.

Pseudomenopon pilosum (Scopoli, 1763)
Pediculus pilosum Scopoli, 1763. Ent. Carniolica: 384.
Menopon tridens Burmeister, 1838. Handb. Ent., 2: 440.
Menopon tridens major Piaget, 1880. (*nec* p. 441). Les Pediculines: 480.
Menopon tridens pacificum Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 166.
Pseudomenopon thompsoni Eichler, 1937. S. B. Ges. Naturf. Fr. Berlin, 1937: 97 (*nn* for *Menopon tridens major* Piaget, 1880).
Type host: *Fulica atra* (Linnaeus)--European Coot.
New England host:
Fulica americana Gemlin--American Coot.

These 3 species are mentioned together because both *P. insolens* and *P. par* may be synonyms of *Pseudomenopon pilosum* (Scopoli, 1763); (Emerson, 1964).

Stanford (1932) reports this species from Utah and Emerson (1940) reports it from Oklahoma. These appear to be the only reports (excluding Kellogg's original descriptions) of this species in the United States.

Pseudomenopon qadrii Eichler, 1952
Pseudomenopon qadrii Eichler, 1952. Zool. Anz., 148: 35, figs. 12-14.
Type host: *Porzana porzana* (Linnaeus).
New England host: *Porzana carolina* (Linnaeus)--Sora.

Peters (1928) reports *Pseudomenopon pilosum* from Ohio, and Peters (1936) from South Carolina. Both recoveries are probably *P. qadrii*.

Specimens	Host	Locality	Date	Collector
1 ♀	*Porzana carolina*	Mt. Desert, Me.	VIII-23-1937	A.E.B.

TRINOTON

Trinoton Nitzsch, 1818. Germar's Mag. Ent., 3: 300.
Type species: *Trinoton conspurcatum* Nitzsch, 1818.
(A synonym of *Trinoton anserinum* (J. C. Fabricius, 1805).
Trinotum Burmeister, 1838. Handb. Ent., 2: 440 (*nn* for *Trinoton* Nitzsch, 1818).
Trinotion Perry, 1876. Proc. Lit. Phil. Soc. Liverpool, 30: Lxxx (misprint).
Ewingiella Eichler, 1941. Stettin Ent. Ztg., 102: 126.
Type species: *Trinoton femoratum* Piaget, 1880.

Laterodorsal margin of head with small protuberance bearing setae; laterodorsal emargination of varying depth. This emargination often overlaps the eye giving the appearance of a deep preocular slit. First and 2nd segments of antennae with distal anterior expansions. Thorax strongly developed and heavily sclerotized; meso- and metathorax separated by distinct suture and neither similar in shape to abdominal segments, the first 2 with spiracles. Chaetotaxy consisting of long and short setae of normal appearance and stout, spine-like setae. These large Menoponidae are not rigidly host specific and are the most common amblyceran found on wild ducks in America north of Mexico. Species of this genus are also found on members of the family Phoenicopteridae, order Ciconiformes.

Trinoton anserinum (J. C. Fabricius, 1805)
Pediculus anserinus J. C. Fabricius, 1805. Syst. Antliatorum: 345.
Pediculus anseris Sulzer, 1776. (*nec* Linnaeus, 1758). Abgek. Gesch. Insekten: 241, pl. 29, fig. 4.
Liotheum conspurcatum Nitzsch, 1818. Germar's Mag. Ent. 3: 330 (*nn* for *P. anseris* Sulzer, 1776).
Trinoton continuum Piaget, 1880. Les Pediculines: 591.
Type host: *Anser anser* (Linnaeus)--Domestic Goose.
New England host:
Branta canadensis (Linnaeus)--Canada Goose.

Peters (1936) has reported this species from Georgia and Emerson (1940) reports it from Oklahoma.

Clay and Hopkins (1960) separate the genus into 4 main groups. The *querquedulae* group, the only one found in New England, is characterized by dorsal prothoracic spine-like setae. The *querquedulae* group can be separated by the character of the chaetotaxy into 2 species, one *T. querquedulae* being found on *Anas* and related genera and one *T. anserinum* on *Anser* and related genera. *T. anserinum* has more numerous setae of which proportionally fewer are spine-like and has small setae making up the brushes of the 3rd femora and sternites IV and V being more numerous.

Specimens	Host	Locality	Date	Collector
4 ♀, 2♂, 1 imm.	*Branta canadensis*	Bar Harbor, Me.	IV-10-1938	A.E.B.
1 ♀	" "	Vassalboro, Me.	X-30-1959	R.Nash
1 ♀	" "	Durham, NH	X-29-1952	D.Dupee

Measurements:	2 ♂ (Bar Harbor)		2 ♀ (Bar Harbor)	
Head Width	1.74	1.56	1.65	1.62
Total Length	5.94	5.22	6.60	6.43

Trinoton querquedulae (Linnaeus, 1758)
Pediculus querquedulae Linnaeus, 1758. Syst. Natr., ed. 10: 612.
Ricinus lari De Geer, 1778. Mem. Hist. Ins., 7: 77, pl. 4, fig. 12.
Trinoton pygmaeus Kolenati, 1846. Melet. Ent., 5: 138, pl. 19, fig. 5.
Type host: *Anas crecca* Linnaeus--Common Teal.
New England hosts:
Any duck found in New England is a potential host for this species of Mallophaga.

This species can be separated from *Trinoton anserinum* by the characters given on the previous page. I have collected *T. querquedulae* from *Melanitta perspicillata*, *Mergus serrator*, *Anas rubripes*, *Aix sponsa*, *Aythya collaris*, and have records of its occurring on specimens too numerous to mention.

RICINIDAE

Members of this family of Mallophaga can be recognized from those of the other families of the suborder Amblycera by the following characteristics: tarsi of all legs 2 clawed; antennae situated in capsules which open ventrally, the capsules not bulbous and not producing lateral swellings on the head. Abdomen with lateral contours but slightly broken by notching at the junction of the segments. This family is small and includes only 2 genera found in New England which can be separated by the following key:

Head deeply emarginate laterally; abdomen stout (on Apodiformes)----------*Trochiloecetes* Paine and Mann, 1913

Head not constricted on the lateral margins; body more or less slender (on Passeriformes, occasionally on hummingbirds)----------*Ricinus* DeGeer, 1778

RICINUS

Ricinus DeGeer, 1778. Mem. Hist. Ins., 7: 69.
Type species: *Ricinus fringillae* DeGeer, 1778.
(By subsequent designation by Neumann, 1906, Bull. Soc. Zool. Fr., 20: 56).
Nirmus Herman, 1804. Mem. Apterolog: 12 (*nn* for *Ricinus* DeGeer, 1778).
Physostomum Nitzsch, 1818. Germar's Mag. Ent., 3: 302.
Type species: *Ricinus nitidissimum* Nitzsch, 1818.
(A synonym of *Ricinus fringillae* DeGeer, 1778).

Large species 2.5 to 5 millimeters in length, body elongate. Head broadly conical, straight or slightly concave on lateral margins, without ocular emarginations, forehead broad and usually truncate or flatly convex in front. Temporal regions angulate. Underside of forehead with 2 small motile muscular lobes projecting caudad slightly beyond lateral margins. Palpi prominent; antennae always concealed and very short. Thorax longer than head, meso- and metathorax completely fused, posterior width of metathorax equal to anterior width of 1st abdominal segment. Legs robust with little coloration and few hairs. First tarsal segment with a small double lobe, 2nd rather short. Abdomen elongate-elliptical, 9th segment broad and rounded. General coloration pale brown to yellowish with lateral "bands" on abdomen.

Ricinus angulatus (Kellogg, 1896)
Physostomum angulatum Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 515, pl. 70, fig. 5.
Type host: *Tyrannus tyrannus* (Linnaeus)--Eastern Kingbird.

Kellogg described this species from 2 females taken in Lawrence, Kansas. Carriker (1957) selected the lectotype and states that the material from the other hosts will prove to be different.

The species is distinguished by the greatly produced occipital angles extending nearly to the middle of the prothorax.

Ricinus arcuatus (Kellogg and Mann, 1912a)
Physostomum fasciatus arcuatus Kellogg and Mann, 1912a. Ent. News, 23: 65.
Type host: *Tyrannus vociferans* Swainson--Cassin's Kingbird.

This species is recognized by 2 setae directly anterior to the eye, the posterior angles of the head with 2 setae and the sides of the prothorax with 3 long setae.

Cassin's Kingbird is not found in New England but *Ricinus arcuatus* is not strictly host specific and is found here on *Tyrannus tyrannus* (Linnaeus)--Eastern Kingbird.

Specimens	Host	Locality	Date	Collector
1 ♂, 2 imm.	*Tyrannus tyrannus*	Durham, NH	VII-19-1965	J.E.K.

Measurements: *Ricinus arcuatus* (Kellogg and Mann, 1912a)

	♂
Head Length	.61
Head Width	.64
Prothorax Width	.58
Pterothorax Width	.69
Abdomen Length	1.44
Abdomen Width	.84
Total Length	2.79

Ricinus diffusus (Kellogg, 1896)
Physostomum diffusum Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 518, pl. 70. fig. 3.
Type host: *Passercula sandwichensis* (Gmelin)--Savannah Sparrow.

Described from 1 female from the type host in California. Peters (1936) has reported it from Massachusetts and South Carolina.

Specimens	Host	Locality	Date	Collector
1 ♀	*Passercula sandwichensis*	Martha's Vineyard, Mass.	IV-23-1933	L.B.Lunz,Jr. (USNM)
1 ♀, 1 ♂	" "	Durham, NH	IX-29-1921	P.R.Lowry

Measurements:	♂	♀	♀ (Kellogg Type)
Head Length	.64	.72	.80
Head Width	.63	.73	.70
Prothorax Width	.54	.63	--
Pterothorax Width	.73	.88	--
Abdomen Length	1.86	2.14	--
Abdomen Width	.84	1.08	1.09
Total Length	3.30	3.84	4.00

Ricinus frenatus (Burmeister, 1838)
Physostomum frenatum Burmeister, 1838. Handb. Ent., 2: 442.
Type host: *Troglodytes troglodytes* (Linnaeus)--Winter Wren or *Regulus regulus* (Linnaeus).

Beyond the fact that this species has been recorded, I have no information concerning it. Procter (1938) reports it from the Golden-crowned Kinglet in Maine.

Ricinus medius Uchida, 1926

Physostomum intermedium Uchida, 1915. (*nec* Piaget, 1880). Annot. Zool. Jap., 9: 68, fig. 1.

Ricinus medius Uchida, 1926. J. Coll. Agri. Tokyo, 9: 54 (*nn* for *P. intermedium* Uchida, 1915).

Type host: *Parus ater insularis* Hellmayr or *Parus atricapillus* Linnaeus--Black-capped Chickadee.

Specimens	Host	Locality	Date	Collector
1 ♂	*Parus atricapillus*	Bar Harbor, Me.	II-23-1936	E.Anthony

I have seen a single male *Ricinus* sp. from *Parus atricapillus* Linnaeus (Bar Harbor, Maine, February 23, 1936), but due to the fact that I was unable to obtain Uchida's original paper describing this species, I am not able to make a specific identification.

Ricinus melospizae (McGregor, 1917)

Physostomum melospizae McGregor, 1917. Ent. News, 28: 436, pl. 28, figs. 3 and 6.

Type host: *Melospiza melodia* Wilson--Song Sparrow.

Described from 2 females collected in Minnesota. Head evenly rounded in front and the occipital angles are produced posteriorly only slightly unlike *Ricinus angulatus* and *R. diffusus*. Prothorax roughly hexagonal; pterothorax with a slight swelling on the anterior 3rd of the sides; abdomen with sides subparallel, terminal segment bluntly rounded, with 4 long hairs and a fringe of 10 setae, lateral bands almost colorless.

Peters (1928) reports this species from Ohio, and Peters (1936) from Delaware, Michigan, New Hampshire, Ohio, and Pennsylvania.

Specimens	Host	Locality	Date	Collector
1 ♀	*Melospiza melodia*	Cape Cod, Mass.	--	C.M.Herman
1 slide	" "	Cohasset, Mass.	V-5-1926	BMS

Ricinus merulae (Durrant, 1906a)

Physostomum merulae Durrant, 1906a. Ohio Nat., 7: 35, fig. 1d.

Type host: *Turdus migratorius* Linnaeus--Robin.

Described from a female collected at Ft. Collins, Colorado, by C. F. Baker.

Measurements of Type Female:

Head Length	.75
Head Width	.75
Thorax Width	1.04
Total Length	4.70
Total Width	1.30

Front of head broad and evenly rounded, sides diverging and slightly swelling, occipital angles extending posteriorly with 3 large bristles along margin evenly spaced. Metathorax larger than prothorax, rounded in front widely diverging in rear. Prothorax with anterior margin concave. Abdomen rounded and oblong.

The only published report, besides the original description of this species occurring in the United States is by Peters (1936) who records *Ricinus* sp. as occurring in Delaware and Virginia on the Eastern Robin, which is most likely this species.

Ricinus pallidus (Kellogg, 1896)
Physostomum diffusum pallidum Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 519.
Type host: *Junco* sp.

Described from 2 females and a young specimen collected in Lawrence, Kansas. The only other records of this species appear to be by Peters (1928) from Ohio and Peters (1936) from Maryland.

I have examined 2 females from Durham, New Hampshire, (1937), which are *Ricinus* but which do not correspond to Kellogg's measurements (cf. *R. diffusus*).

Specimens	Host	Locality	Date	Collector
2 ♀	*Junco hyemalis*	Durham, NH	IV-5-1937	J.G.Conklin

Junco oreganus (Townsend), although not common in New England, occurs casually here in the winter months and is possibly a host for *R. pallidus*.

Ricinus serratus (Durrant, 1906)
Physostomum serratum Durrant, 1906. Ohio Nat., 6: 528, fig. 1b.
Physostomum clypeatum Mjoberg, 1910. Ark. Zool., 6: 60, figs. 35-36, and pl. 2, fig. 1.
Type host: *Eremophila alpestris* (Linnaeus)--Horned Lark.

Described from a single female collected at Ft. Collins, Colorado, by J. H. Cowen. This is the only published record of this species in the United States.

Durrant describes the female as 4.7 mm long and 1.3 mm wide, a very large *Ricinus*. Head .88 mm long, .86 mm wide, lateral margins slightly concave, occipital border broadly concave. Thorax much broader than long. Abdomen with wide marginal bands and with sides slightly swelling at the middle.

The Horned Lark is a casual winter visitor to New England at best. It is mentioned in all of the checklists of New England birds but it is not often seen and rarely captured. I have only 1 record of Mallophaga being collected from *Eremophila alpestris* (Linnaeus) in New England: Belchertown, Massachusetts, March 13, 1926, by Dr. E. G. Rowland. A *Philopterus* sp. was collected from this bird and is now in the Boston Museum of Science collection.

Ricinus subhastatus (Durrant, 1906)
Physostomum sub-hastatum Durrant, 1906. Ohio Nat., 6: 528, fig. 1a.
Type host: *Pipilo erythrophthalmus* (Linnaeus)--Rufous-sided Towhee.

Measurements of Type Female:

Head Length	.73
Head Width	.60
Thorax Width	.65
Total Length	3.17
Total Width	.98

Described from a specimen collected at Ft. Collins, Colorado, by C. F. Baker.

Ricinus thoracicus (Packard, 1870)
Nirmus thoracicus Packard, 1870. Amer. Nat., 4: 94, pl. 1, fig. 5.
Type host: *Plectrophenax nivalis* (Linnaeus)--Snow Bunting.

I have no data on this species of Mallophaga.

TROCHILOECETES

Trochiloecetes Paine and Mann, 1913. Psyche, 20: 21.
Type species: *Physostomum prominens* Kellogg and Chapman, 1899.

The genus *Trochiloecetes* is represented in New England by a single species, *Trochiloecetes lineatus* (Osborn, 1896). All members of this genus are parasitic on members of the family Trochilidae of the order Apodiformes.

Trochiloecetes lineatus (Osborn, 1896)
Physostomum lineatum Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 248.
Type host: *Archilochus colubris* (Linnaeus)--Ruby-throated Hummingbird.

The key to the genera under the family Ricinidae will serve well for this single species found in this area.

Carriker (1960) has reviewed this genus and placed *Trochiloecetes lineatus* in the genus *Trochiliphagus*. This was understandable since he had no material from the type host for examination but only the original description. For the purposes of this paper, I have followed the classification of Emerson (1964).

Specimens	Host	Locality	Date	Collector
4 ♀	*Archilochus colubris*	Lincoln, Me.	V-30-1936	?

Measurements:	4 ♀ (Average)
Head Length	.43
Head Width	.45
Prothorax Width	.35
Pterothorax Width	.46
Abdomen Length	.71
Abdomen Width	.60
Total Length	1.54

KEY TO THE ISCHNOCERA OF NEW ENGLAND BIRDS

1. Preantennal region furnished with one or more pair of inflated or strong setae----------2
   Preantennal region without modified setae----------3

2. Two pair of anterior clypeal spines present; preantennal region with a median suture----------*COLUMBICOLA*
   One pair of anterior clypeal spines; preantennal region with a transverse suture----------*ANATICOLA*

3. Anterior margin of head pincer-like----------4
   Anterior margin of head not pincer-like----------5

4. Anterior margin of head pincer-like with open or closed blades----------*ORNITHOBIUS*
   Anterior margin of head pincer-like flanked by hyaline flaps----------*INCIDIFRONS*

5. Lateral border of preantennal region with 4-6 circular incrassations----------*FALCOLIPEURUS*
   Lateral border of preantennal region without such circular incrassations----------6

6. Preantennal region with a pair of posteriorly directed spine-like processes----------*PHYSCONELLOIDES*
   Preantennal region without a pair of posteriorly directed spine-like processes----------7

7. Head lacking hyaline margin and dorsal anterior plate; antennae of ♀ filiform; at least one segment of ♂ antennae enlarged or with an appendage----------8
   Head with dorsal anterior plate and hyaline margin present even if one or both may be inconspicuous----------13

8. Postantennal region greatly expanded; angular in shape----------12
   Postantennal region only slightly expanded; slender body form----------9

9. Dorsal surface of preantennal region without a transverse suture----------10
Dorsal surface of preantennal region with a transverse suture----------*RHYNONIRMUS*

10. Head of male and female with chitin of anterior portion of head arranged into a number of projections----------*OXYLIPEURUS*
Head without such chitinous projections----------11

11. Female tergal plates with a median division; male width at temples not less than at antennae----------*CUCLOTOGASTER*
Female tergal plates entire, without a median division; male width at temples less than at antennae----------*LIPEURUS*

12. First abdominal segment larger than those following; temples not prolonged beyond the ocular margin----------*GONIODES*
First abdominal segment smaller than those following; temples prolonged beyond the ocular margin----------*CHELOPISTES*

13. Dorsal anterior plate bearing numerous crescentic papillae on the dorsal surface----------*ARDEICOLA*
Dorsal anterior plate without such papillae----------14

14. Dorsal anterior plate large with a longitudinal slit; gular plate large; abdominal segment IX of ♀ bilobed----------*FULICOFFULA*
Without above combination of characters----------15

15. Head wider than long----------16
Head longer than wide----------17

16. Antennae similar in both sexes or 3rd segment of ♂ with an appendage; ♀ with 2 genital setae on a ventral tubercle on each side----------*RALLICOLA*
Antennae similar in both sexes, ♀ without genital setae on a ventral tubercle on each side----------*STRIGIPHILUS*

17. Antennae similar in both sexes or 3rd segment of ♂ with an appendage; ♂ genitalia simple----------*RALLICOLA*
Antennae of ♂ with an appendage on the 1st or 3rd segment; ♂ genitalia very complex----------*PECTINOPYGUS*
Antennae similar in both sexes----------18

18. Anterior margin of head with a deep emargination----------*ACIDOPROCTUS*
Head without such emargination----------19

19. Head with a narrow inconspicuous hyaline margin and small dorsal anterior plate----------*LUNACEPS*
Head lacking the combination of characters of an inconspicuous hyaline and a small dorsal anterior plate----------20

20. Head with a dorsal anterior plate----------21
Head without a dorsal anterior plate----------34

21. Tergites divided medially----------24
Tergites not divided medially----------22

22. Dorsal transverse suture present at the level of the antennae; preantennal region rectangular---------*CRASPEDONIRMUS*
Dorsal transverse suture absent at the level of the antennae; preantennal region trapezoidal-------*CUMMINGSIELLA*
Tergites not divided medially; preantennal region rounded in front----------23

23. Dorsal surface of head without a transverse suture----------*QUADRACEPS*
Dorsal surface of head with a transverse suture at or posterior to the antennae----------*CARDUICEPS*

24. Tergites divided medially; head not rounded in front but rectangular or trapezoidal----------25
Tergites III-IV of ♀ divided medially; head rounded in front----------*BRÜELIA*

25. Hyaline margin free throughout extent of preantennal region; preantennal region apically concave with a tuft of 3 or more long setae at each anterolateral angle----------*CUCULOECUS*
Preantennal region without above combination of characters----------26

26. Slender body form; width of abdomen of ♀ no wider than head----------27
Robust body form; abdomen of both sexes wider than head----------28

27. Terminal abdominal segment of ♂ bilobed----------*AQUANIRMUS*
Terminal abdominal segment of ♂ not bilobed----------*MULCTICOLA*

28. Preantennal region rounded with a free hyaline margin throughout; dorsal surface of head with peg-like spines----------*ANATOECUS*
Preantennal region of head without above combination of characters----------29

29. Premarginal bands and ventral bands of head extending beyond anterior margin of dorsal anterior plate----------*CRASPEDORRHYNCHUS*
Without above combination of characters----------30

30. Paramers of ♂ genitalia long, curved; abdominal sternite VII of ♀ with a posteriorly directed projection at each anterolateral angle-------*SAEMUNDSSONIA*
Without above combination of characters----------31

31. Dorsal anterior plate not emarginate anteriorly----------32
Dorsal anterior plate emarginate anteriorly----------*STURNIDOECUS*

32. Temples equal to or slightly expanded beyond the width of the antennal region----------*PENENIRMUS*
Temples expanded well beyond the width of the antennal region----------33

33. Parameres of ♂ genitalia short and blunt----------*PHILOPTERUS*
Parameres of ♂ genitalia elongate and tapering---------*STRIGIPHILUS*

34. Head longer than wide----------37
Head wider than long----------35

35. Temples angular----------36
Temples broadly rounded----------*ROTUNDICEPS*

36. One pair of medium length setae on each sternite and tergite----------*GONIOCOTES*
A few small setae scattered on some sternites and tergites----------*CAMPANULOTES*

37. Tergal plates II-VI of both sexes transversely continuous----------38
Some tergal plates on segments II-VI of one sex, usually the ♀ divided medially----------39

38. Temporal carina thickened and with a cellulated appearance----------*PICICOLA*
Temporal carina thin, normal in appearance----------*DEGEERIELLA*

39. First apparent abdominal tergite of ♀ divided medially by a clear area----------*LAGOPOECUS*
First apparent abdominal tergite of ♀ divided medially by an indistinct suture----------*CUCULICOLA*

ACIDOPROCTUS

Acidoproctus Piaget, 1878. Tijdschr. Ent., 21: 178.
Type species: *Acidoproctus marginatus* Piaget, 1878, a synonym of *Acidoproctus rostratus* (Rudow, 1866) (By subsequent designation by Johnston and Harrison, 1911, Proc. Linn. Soc. N. S. W., 36: 326).
Akidoproctus Piaget, 1880. Les Pediculines: 208 (Emendation).
Heteroproctus Harrison, 1915. Parasitology, 7: 394.
Type species: *Heteroproctus hilli* Harrison, 1915.

This genus is characterized by the presence of a deep angular emargination on the anterior margin of the head. Antennae of the male with an appendage on the 3rd segment. Temporal lobes long, rounded posteriorly, with a few setae. Prothorax subquadrangular with prominent stigmata at the posterolateral angles; metathorax widest posteriorly and wider than head. Abdomen elongate-oval, 9 segmented, the segments without setae except at their posterolateral angles; 8th segment appearing to be double. In this genus the abdomen is parallel sided, tapering rapidly from the 7th segment to an acuminate point posteriorly in the female but only gradually in the male to a wide, bilobed segment. Members of this genus are quite long measuring 3 to 4 mm. Species of this genus are uncommon in collections and distribution on hosts of the Anseriformes is not well known. Carriker (1949a, 1954), and Timmermann (1962), have discussed the genus *Acidoproctus*.

Acidoproctus kelloggi (Carriker, 1902)

Akidoproctus kelloggi Carriker, 1902. J. N. Y. Ent. Soc., 10: 228, pl. 22, figs. 1-2.

Type host: *Aytha valisineria* (Wilson)--Canvasback.

Head elongate cordate, rather broadly rounded in front with 6 short bristles on each side between the trabeculae and the clypeal notch; 1 short bristle on each side just within the opening of the notch; temples with 1 weak hair and 5 short bristles; occiput deeply concave; eye prominent, convex and, contrary to Piaget's description, has a large stiff bristle upon the dorsal surface. Prothorax short quadrilateral, with rounded angles and convex sides. The metathorax longer than the prothorax and nearly twice as wide; sides rounded and widely diverging; posterior margin sharply angulated with a few weak bristles; a pair of long hairs at the middle on each side and 3 at the posterior angles. Abdomen elongate-oval, constricted posteriorly and widest at the 2nd segment; lateral margins of each segment convex, more so posteriorly.

Measurements: (Carriker, 1902)

	♂	♀
Head Length	.76	.77
Head Width	.64	.65
Abdomen Width	.80	.72
Total Length	3.50	3.65

This species was described from 5 males and 1 female collected from *Aytha valisinera* (Wilson) Lincoln, Nebraska, March 25, 1901.

Specimens	Host	Locality	Date	Collector
1 slide	*Aytha valisineria*	Mass.	--	--

Anaticola Clay, 1936. Proc. Zool. Soc. London, 1936: 617.
Type species: *Pediculus crassicornis* Scopoli, 1763.

Elongate Ischnocera, adult males and females 3-5 mm in length. Clypeus narrowly rounded anteriorly. Dorsal anterior plate differing slightly in the 2 sexes, that of the female generally semi-lunate, longer than wide, rounded anteriorly and concave posteriorly with a ventral groove containing 2 hairs arising from unsclerotized spaces. Chaetotaxy of the ventral surface of the head characteristic, with hairs along the lateral margins but absent in front and elsewhere sparse or absent. Dorsal surface of head with 2 pustulated setae immediately above the level of the large antennal fossae. Antennae with 1st segment enlarged in male and 3rd segment produced at apex. Prothorax small with sides slightly convex; pterothorax larger and slightly wider than prothorax. Sternal plate of pterothorax is large although sometimes not apparent, joined by a sclerotized rod to a smaller plate which projects into the 1st abdominal segment. Abdomen elongate; spiracles on segments II-VII. Short, rod-like parameres of male genitalia lie within the mesosomal plate. Penis a straight tube, forked at proximal end.

Anaticola anseris (Linnaeus, 1758)
Pediculus anseris Linnaeus, 1758. Syst. Nat., ed. 10: 612.
Philopterus jejunus Nitzsch, 1818. Germar's Mag. Ent., 3: 292 (*nn* for *P. anseris* Linnaeus, 1758).
Ornithobius anseris Gurlt, 1842. Mag. ges. Thierheilk, 8: 426, pl. 4, figs. 12-13.
Lipeurus bishoppi McGregor, 1917a. Psyche, 24: 111, pl. 6, figs. 2 and 4.
Esthiopterum anseris domestici Wundrig, 1936. Zool. Jb. Abt. 2, 62: 84, fig. 51.
Type host: Domestic Goose.

The genus *Anaticola* is in need of revision. The species name *anseris* and its subspecies are presently used to designate those *Anaticola* found on geese.

Measurements: *Anaticola anseris* (Linnaeus, 1758)
(from Clay and Hopkins, 1950)

	♂	♀
Head Length	.61	.68
Head Width	.42	.48
Abdomen Length	1.59	2.06
Abdomen Width	.51	.73
Total Length	2.76	3.50

Specimens	Host	Locality	Date	Collector
1 slide	*Chen caerulescens*	Duxbury, Mass.	XI-3-1926	BMS
9 ♀	*Branta bernicla*	Hampton, NH	XI-8-1964	B.Barrett
5 ♀, 2 ♂	" "	" "	X-28-1965	B.Barrett
1 ♀	" "	Rye, NH	XI-17-1933	L.R.Nelson (USNM)

Apparently *A. anseris* does not parasitize the Canada Goose, *Branta canadensis*. I have been unable to find records of its occurring on this species of bird and have not recovered it in 7 examinations of Canada Geese.

Anaticola crassicornis (Scopoli, 1763)

Pediculus crassicornis Scopoli, 1763. Ent. Carniolica: 383.
Pediculus anatis Schrank, 1781. Enum. Ins. Austr. Indig.: 503.
Pediculus anatis J. C. Fabricius, 1794. Ent. Syst. Suppl: 571.
Lipeurus squalidus Nitzsch, 1818. Germar's Mag. Ent., 3: 292 (*nn* for *P. anatis* J. C. Fabricius, 1794).
Anaticola zunkeri Keler, 1937. Arb. morph. tax. Ent. Berlin-Dahlem, 4: 318.
Type host: *Anas platyrhynchos* Linnaeus--Mallard.

The species name *crassicornis* and its subspecies are used to designate those *Anaticola* found upon all Anatidae excluding the Cyginae, Anserinae and the Dendrocyginae. Members of this species can be separated from *A. anseris* mainly by the shorter length of the penis.

Length of penis (number of specimens in brackets):
(from Clay and Hopkins, 1951)

Anaticola crassicornis----0.13 (1), 0.15 (7), 0.16 (1).
Anaticola anseris---------0.27 (3).

Specimens	Host	Locality	Date	Collector
1 ♀	*Anas platyrhynchos*	Durham, NH	X-24-1964	J.E.K.
1 slide	*Anas rubripes*	Middletown, Conn.	X-2-1925	O.L.Austin (USNM)
1 ♂	" "	Plum Island, Mass.	XII-3-1964	--
2 ♀, 2 ♂	" "	" " "	X-16-1965	F.Burgess
1 ♀, 2 ♂	" "	Strafford, NH	X-29-1965	--
1 slide	*Anas strepera*	Wenham, Mass.	XI-21-1927	USNM
1 slide	" "	" "	XI-21-1927	BMS
1 slide	*Anas carolinensis*	Rye, NH	X-26-1934	L.R.Nelson (USNM)
1 ♂	*Anas discors*	Hampton, NH	IX-9-1965	B.Barrett
1 slide	" "	Seabrook, NH	IX-2-1936	USNM
1 slide	*Aix sponsa*	Middletown, Conn.	X-2-1925	O.L.Austin (USNM)
6 ♀, 4 ♂	" "	Hampton, NH	X-28-1965	B.Barrett
2 ♀, 2 ♂	" "	Ossipee, NH	VIII-3-1965	A.H.Mason
1 ♀	" "	Strafford, NH	X-31-1964	--
1 slide	" "	Winchester, NH	IX-22-1934	L.R.Nelson (USNM)
2 ♀	*Bucephala albeola*	Dover, NH	X-30-1964	D.Gallup
5 ♀, 1 ♂	" "	Hampton, NH	X-24-1964	B.Barrett
1 slide	" "	Rye, NH	XI-1-1934	L.R.Nelson (USNM)
1 slide	*Clangula hymenalis*	Rye, NH	X-24-1932	L.R.Nelson (USNM)
1 slide	" "	Rye, NH	XI-21-1933	L.R.Nelson (USNM)

(Continued)

Specimens	Host	Locality	Date	Collector
1♀, 2 imm.	*Histrionicus histrionicus*	Hampton, NH	X-24-1964	B.Barrett
1♀, many imm.	*Somateria mollissima*	Hampton, NH	X-24-1964 X-9-1964	B.Barrett
1 slide	" "	Duxbury, Mass.	XII-13-1926	BMS
--	*Melanitta deglandi*	Hampton, NH	X-5-1964	B.Barrett
--	" "	" "	X-9-1964	" "
3	" "	" "	XI-2-1965	" "
15	" "	" "	XI-23-1965	D.Brannigan
2 imm.	*Melanitta perspicillata*	" "	X-3-1963	B.Barrett
1 slide	" "	Bristol, RI	--	Cornell Coll.
1♀	*Oidemia nigra*	Hampton, NH	XI-20-1963	B.Barrett
1♀	" "	" "	X-10-1964	" "
5♀, 1♂	*Mergus serrator*	Winthrop, Me.	XI-11-1953	A.E.B.
1 slide	" "	Chatham, Mass.	IV-16-1936	USNM

ANATOECUS

Anatoecus Cummings, 1916. Proc. Zool. Soc. London, 1916: 653.
Type species: *Anatoecus icterodes* (Nitzsch, 1818).
Cereopsoecus Keler, 1960. Zeitr. Parasit., 20: 238.
Type species: *Cereopsocus clayae* Keler, 1960.
Flamingobius Keler, 1960. Zeitr. Parasit., 20: 305.
Type species: *Docophorus pygaspis* Nitzsch, 1866.

Short robust Philopteridae. Head with distinct hyaline margin, extending from each premarginal carina and rounded in front; large shield-shape dorsal anterior plate with posterior projection. Postmarginal carinae and temporal carinae well developed. Antennae filiform and similar in the 2 sexes. Prothorax with 1 lateral spine-like, and 1 long seta at each posterolateral angle. Pterothorax with 1 lateral spine-like seta on each side and 12 long setae along the dorsoposterior margin. Abdomen stout with well developed pleural plates. Tergite I undivided; tergites II-VIII divided medially; tergites IX-X fused, greatly narrowed, and continuous across the segment.

At the present time it is uncertain as to whether 1 or 2 species of *Anatoecus* infest birds of the order Anseriformes in New England. The females of the 2 possible species cannot be separated and the separation of the males is by the presence or absence of the "effractor" (Cummings, 1916: 652) in the male genitalia. The situation is complicated by the fact that both species may be present on the same host.

Anatoecus dentatus (Scopoli, 1763)
Pediculus dentatus Scopoli, 1763. Ent. Carniolica: 383.
Type host: *Anas platyrhynchos* Linnaeus--Mallard.
Other New England hosts:
Mergus merganser Linnaeus)--Common Merganser.
Spatula clypeata (Linnaeus)--Shoveler
Somateria mollissima (Linnaeus)--Common Eider.

In the male of this species the "effractor" is present. All other characters are contained in the genus description.

Measurements: *Anatoecus dentatus* (Scopoli, 1763)
(from Clay and Hopkins, 1951)

	♂
Head Length	.47
Head Width	.43
Prothorax Width	.28
Pterothorax Width	.37
Abdomen Length	.72
Abdomen Width	.60
Total Length	1.45

Anatoecus icterodes (Nitzsch, 1818)
Docophorus icterodes Nitzsch, 1818. Germar's Mag. Ent., 3: 290.
Pediculus mergi Guerin, 1818 (*nec* J. C. Fabricius, 1781). Bonaterre's Encyc. Method., pt. 24: 128, pl. 254, fig. 2.
Nirmus fuligulae Denny, 1852. List Brit. Animals in Brit. Mus., pt. 2, Anoplura: 13 (*nn* for *D. icterodes* Nitzsch, 1818).
Type host: *Mergus serrator* Linnaeus--Red-breasted Merganser.
Other New England hosts:
Domestic Goose
Anas platyrhynchos Linnaeus--Mallard.
Spatula clypeata (Linnaeus)--Shoveler.
Aythya affinis (Eyton)--Lesser Scaup.
Clangula hyemalis (Linnaeus)--Oldsquaw.
Somateria mollissima (Linnaeus)--Common Eider.
Mergus merganser Linnaeus--Common Merganser.

In the male of this species the "effractor" is absent. Emerson (1964) states that, "the question of whether or not *Anatoecus icterodes* is a dimorphic form of *Anatoecus dentatus* has not been settled satisfactorily."

Measurements: *Anatoecus icterodes* (Nitzsch, 1818)
(from Clay and Hopkins, 1960)

	♂
Head Length	.43
Head Width	.40
Prothorax Width	.27
Pterothorax Width	.35
Abdomen Length	.59
Abdomen Width	.61
Total Length	1.29

From all of the above material, especially the host list for these 2 species of Mallophaga, it is obvious that a list of material examined would add little to what is already known about this genus. It is sufficient to state that any species of Anseriformes in New England is a potential host for both of these species of *Anatoecus*.

Aquanirmus Clay and Meinertzhagen, 1939a. Entomologist, 72: 163.
Type species: *Degeeriella runcinata* (Nitzsch, 1866).

Moderately elongate Philopteridae, typically parasitic on grebes. Darkly to moderately pigmented. Size of male 1.3-1.8 mm. Size of female 2.1-2.6 mm. Pre- and post-marginal carina separate, ventral carina heavily sclerotized, continuous with premarginal carina and extending posteriorly to anterior articulation of mandible. Clypeus divided medially. Dorsal anterior plate pentagonal with narrow anterior hyaline margin. Tergites divided medially except for terminal segments. Sternites III-VI divided medially. Sternite VIII of female with 2 transverse rows of setae on posterior margin. Male genitalia relatively simple, symmetrical, parameres not articulated and with relatively simple mesosome.

Aquanirmus bucomfishi Edwards, 1965
Aquanirmus bucomfishi Edwards, 1965. Canad. Ent., 97: 931, figs. 1, 2, and 4.
Type host: *Podiceps auritus* (Linnaeus)--Horned Grebe.

A small species of *Aquanirmus*; male average 1.47 mm; female average 2.45 mm. Carinae of head, thorax and abdomen darkly pigmented. Tergites with narrow bands giving the abdomen a banded appearance. The sclerotized tube of the mesosome nearly twice as long as average (0.40 mm). This species is confined to *Podiceps auritus* in North America, being replaced by *Aquanirmus colymbinus* (Scopoli, 1763) on *Podiceps auritus* in Europe.

Specimens	Host	Locality	Date	Collector
3 ♀	*Podiceps auritus*	Hampton, NH	X-16-1965	B.Barrett

Peters (1928) and (1936) reports this species from Ohio and Illinois respectively; Brimly (1938) North Carolina; and Edwards (1965) South Carolina, Mississippi, and California.

Aquanirmus emersoni Edwards, 1965
Aquanirmus emersoni Edwards, 1965. Canad. Ent., 97: 928, figs. 2-4.
Type host: *Podiceps grisegena* (Boddaert)--Red-necked Grebe.

A relatively large species of Aquanirmus; male average 1.69 mm, female average 2.40 mm in length. Lateral lobes of male terminal tergite may extend slightly beyond posterior sternal margin. Chaetotaxy of sternite crowded posteriorly. Male genitalia large, 0.275 mm long, 0.159 mm wide. Female sternite VIII with 14 (13-15) setae in outer row, 13 (12-14) in inner row.

The only records of *Aquanirmus emersoni* are by Edwards (1965) from Massachusetts and Oregon.

Aquanirmus podilymbus Edwards, 1965

Aquanirmus podilymbus Edwards, 1965. Canad. Ent., 97: 929, figs. 2 and 4.

Type host: *Podilymbus podiceps* (Linnaeus)--Pied-billed Grebe.

Size moderate; male average 1.59 mm., female average 2.27 mm. Male terminal tergite does not extend beyond the sternal margin. Female sternite VIII with 14 (13-15) setae in outer row, 10 barely distinguishable setae in inner row. Pigmentation general.

The only published record of this species in the United States is by Edwards (1965) from South Carolina.

ARDEICOLA

Ardeicola Clay, 1936. Proc. Zool. Soc. London, 1936: 615.

Type species: *Esthiopterum ardeae* (Linnaeus, 1758).

Head longer than wide, triangular in shape with rounded anterior margin; dorsal anterior plate well developed with small papillae on the anterior half. Internal carinae well developed; eyes well developed; postantennal area rounded or with margins parallel, posterolateral angle rounded; males with basal segment of antenna expanded, segments II, IV, and V normal, lateral anterior margin of segment III laterally produced. Prothorax wider than long, sides parallel or slightly diverging. Pterothorax about as long as wide, lateral margins straight with slight posterior divergence, pustulated setae at the posterolateral angles. Abdomen elongate; tergites I-VII of female separated medially; tergites IV-VII of male entire; spiracles on segments II-VII. Members of this genus have relatively few setae on the abdomen.

Members of this genus are found on birds of the order Ciconiiformes.

I was unable to collect members of this genus during the course of this study, therefore, the descriptions were taken from Tuff (1963) and from the original descriptions.

Ardeicola botauri (Osborn, 1896)

Lipeurus botauri Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 234.

Type host: *Botaurus lentiginosus* (Rackett)--American Bittern.

Head with dorsal anterior plate rounded, with crescentic papillae; lateral margins straight; coni greatly reduced; third segment of male antenna with a lateral projection; postantennal region slightly curved. Prothorax wider than long; lateral margins narrowing slightly anteriorly; prothorax with very few setae. Pterothorax wider than long; posterolateral margin with a single long seta and a row of three closely grouped submarginal setae. Abdomen widest at segment IV.

Osborn gave no locality for the collection of the species; however, The Ohio State University has one of his slides of this species (♀) collected at Ames, Iowa. This species has been reported by Peters (1928) Ohio, Wilson (1928) New York, Peters (1936) Alabama and New Hampshire, Procter (1938) Maine, Brimley (1938) North Carolina, and Whitehead (1954) Quebec.

Ardeicola cruscula Carriker, 1960a

Ardeicola cruscula Carriker, 1960a. Novedades Colombianas, 1: 318, fig. 1.

Type host: *Ardea herodias* Linnaeus--Great Blue Heron.

The largest of the heron infesting *Ardeicola*. Males with three long submarginal setae on posterior angle of pterothorax and a medium length seta not associated with the above group at the posterolateral margin. Abdomen elongate, widest at segment IV; pigmentation on tergite I confined to a spot on the lateral margin; tergites II and III with color restricted to a rectangular area on the lateral margin. Female similar to male; antennae filiform. Prothorax and pterothorax as in the male.

Measurements:	♂	♀
Head Length	.76	.81
Prothorax Width	.34	.36
Pterothorax Width	.49	.51
Abdomen Length	1.63	1.82
Abdomen Width	.59	.68
Total Length	2.96	3.17

Ardeicola gaibagla Ansari, 1947

Ardeicola gaibagla Ansari, 1947. Proc. Nat. Inst. Sci. India, 13: 256, fig. 1.

Ardeicola albulus Eichler, 1948. Vogel der Heimat., no. 6: 107, figs. 2 and 3.

Type host: *Bubulcus ibis* Linnaeus--Cattle Egret.

Other New England host:

Casmerodius albus (Linnaeus)--Common Egret.

Head long and narrow; dorsal anterior plate bearing about fifty-seven crescentic papillae; temples rounded with narrow, indistinct, yellowish marginal bands; gular plate weak. Prothorax small, lateral margins straight with a small seta at the posterolateral angle. Pterothorax slightly wider than prothorax and bearing four pustulated hairs on the posterior margin; sternal plates indistinct. Abdomen elongated, widest at segment V, gradually tapering towards the posterior end.

Measurements:	♂	♀
Head Length	.66	.70
Prothorax Width	.30	.34
Pterothorax Width	.39	.42
Abdomen Length	1.65	2.05
Abdomen Width	.50	.52
Total Length	2.81	3.27

Ardeicola goisagi Uchida, 1953

Ardeicola goisagi Uchida, 1953. Iconographia Insectorum Japonicorum, Tokyo: 109, fig. 269.
Type host: *Nycticorax nycticorax* (Linnaeus)--Black-crowned Night Heron.

Males and females appear morphologically similar to other members of this group. This species is distinguished by the tergel pigmentation in both sexes being limited to a small area on the anterior lateral angle of tergites II-VII.

Measurements:	♂	♀
Head Length	.69	.75
Prothorax Width	.30	.33
Pterothorax Width	.37	.44
Abdomen Length	1.56	2.04
Abdomen Width	.57	.69
Total Length	2.69	3.29

BRÜELIA

Brüelia Keler, 1936. Arb. morph.-tax. Ent. Berlin-Dahlem, 3: 257.
Type species: *Brüelia rossittensis* Keler, 1936. (A synonym of *Nirmus brachythorax* Giebel, 1874).
Meropsiella Conci, 1941. Boll. Soc. Ent. Ital., 73: 104.
Type species: *Nirmus apiastri* Denny, 1842.
Corvonirmus Eichler, 1944. Stettin. Ent. Ztg., 105: 81.
Type species: *Nirmus uncinosus* Burmeister, 1838.
Painjunirmus Ansari, 1947. Proc. Nat. Inst. Sci. India, 13: 285.
Type species: *Painjunirmus pengya* Ansari, 1947.
Traihoriella Ansari, 1947. Proc. Nat. Inst. Sci. India, 13: 290.
Type species: *Traihoriella punjabensis* Ansari, 1947.
Guimaraesiella Eichler, 1949a. Boll. Soc. Ent. Ital., 79: 11.
Type species: *Docophorus subalbicans* Piaget, 1885. (A synonym of *Docophorus papuanus* Gieb l, 1879).
Xobugirado Eichler, 1949a. Boll. Soc. Ent. Ital., 79: 13.
Type species: *Nirmus submarginellus* Nitzsch, 1866. (A synonym of *Nirmus menuraelyrae* Coinde, 1859).
Allobrüelia Eichler, 1951. *In Forschung und Praxis*, Bedeutung der Vogelwelt, Berlin: 36.
Type species: *Allobrüelia amsel* Eichler, 1951.
Turdinirmus Eichler, 1951. *In Forschung und Praxis*, Bedeutung der Vogelwelt, Berlin: 36.
Type species: *Turdinirmus merulensis* (Denny, 1842).

Within the genus *Brüelia* can be seen a series of species ranging from those having an entire marginal carina and no dorsal anterior plate to those species having the marginal carina interrupted medially and laterally and having the dorsal anterior plate well developed (Clay, 1951). Head quite large, "thimble shaped", with preantennal region bluntly conic. All known species have the ventral carina of the head in-

terrupted. Antennae filiform and similar in both sexes; trabeculae variable in shape. Temporal lobes evenly expanded laterally. Prothorax small with the lateral margins slightly concave in almost all species. Pterothorax broader than long, sides diverging and posterior margin evenly rounded. Abdomen elongate-oval, in many species distinctly marked by well sclerotized areas. Abdominal tergal plates of female, usually III-IV, separated medially. Male genitalia with a large basal plate and short, blunt parameres.

Brüelia argula (Burmeister, 1838)
Nirmus argulus Burmeister, 1838. Handb. Ent., 2: 430.
Type host: *Corvus corax* Linnaeus--Common Raven.

I have no data on this species of Mallophaga. The Common Raven is a casual visitor in New England and not often collected.

Brüelia cedrorum (Piaget, 1880)
Nirmus brachythorax cedrorum Piaget, 1880. Les Pediculines: 151, pl. 12, fig. 2.
Type host: *Bombycilla cedrorum* Vieillott--Cedar Waxwing.

I have no information concerning this species of *Brüelia*.

Specimens	Host	Locality	Date	Collector
1♀, 1♂	*Bombycilla cedrorum*	Madbury, NH	VIII-26-1963	J.E.K.

The Madbury collection yielded 1 male and 1 female *Brüelia* which may be referable to this species.

Brüelia clayae Ansari, 1956a
Brüelia clayae Ansari, 1956a. Bull. Brit. Mus. (N. H.) Ent. 4: 375, figs. 7-13.
Type host: *Cyanocitta cristata* (Linnaeus)--Blue Jay.

Head triangular; preantennal marginal carina interrupted medially; ventral carina interrupted medially and continuous with the premarginal carina. Temple with one long seta. Prothorax short with 1 long seta in each posterolateral angle. Pterothorax with 6 long setae on each side on the posterodorsal margin. Abdomen elliptical. Tergites II-VIII with 2 central short setae. Male genitalia well developed.

Specimens	Host	Locality	Date	Collector
--	*Cyanocitta cristata*	Durham, NH	VIII-20-1964	J.E.K.
--	" "	" "	VIII-24-1964	J.E.K.
--	" "	" "	IX-15-1964	J.E.K.
--	" "	" "	IX-30-1964	J.E.K.
--	" "	" "	X-5-1964	J.E.K.

Brüelia domestica (Kellogg and Chapman, 1899)

Nirmus longus domesticus Kellogg and Chapman, 1899, Occ. Pap. Calif. Acad. Sci., 6: 93.

Type host: *Hirundo rustica* Linnaeus--Barn Swallow.

This specimen, according to the authors, was supposed to be closely related to *N. longus*, differing in having 3 instead of 6 lateral metathoracic setae; a more elongate head; and the median uncolored longitudinal line of the abdomen. Carriker (1957) says that the "type" of *domesticus* is a typical *Brüelia*, but of an entirely different form from the figure and specimen of *longus*. He states (1963a) that the specimen marked as the type of *domesticus* is not the specimen described, and the name must be disregarded.

Specimen	Host	Locality	Date	Collector
1 ♀	*Hirundo rustica*	Kingston, RI	VII-5-1962	A.Moorehouse (URI Coll.)

Brüelia iliaci brevicolor Ansari, 1956

Bruelia iliaca brevicolor Ansari, 1956. Biologia, 2: 110, figs. 8-13.

Type host: *Turdus migratorius* Linnaeus--Robin.

A delicate and feebly sclerotized species; lateral margins of clypeal region moderately convex; marginal carina narrow, indented medially. Pterothorax a little less than twice as wide as long. Tergite V and VIII with 1, VI and VII with 2 tergolateral setae on each side.

Peters (1928) reports this species from Ohio; Peters (1936) from North Carolina; and Ansari (1956) from Arizona.

Specimen	Host	Locality	Date	Collector
1 ♀	*Turdus migratorius*	Durham, NH	III-29-1948	E.O.Hooghkirk

One female *Brüelia* which is probably this species. The specimen was mounted without removing the gut contents, thereby obscuring the chaetotaxy necessary for species identification.

Brüelia imponderabilica Eichler, 1954a

Brüelia imponderabilica Eichler, 1954a. Nach. Nat. Mus. Aschaffenburg, 42: 61, pl. 11, fig. 3.

Type host: *Lanius excubitor* Linnaeus--Northern Shrike.

I have no data on this species of *Brüelia* and have not collected its host.

Brüelia infrequens (Carriker, 1902)

Nirmus infrequens Carriker, 1902. J. N. Y. Ent. Soc., 10: 220, pl. 20, fig. 3.

Type host: *Calcarius lapponicus* (Linnaeus)--Lapland Longspur.

Head elongate with V-shaped ocular bands; temples with 1 long seta and 1 short bristle on each side. Prothorax small, angles rounded; heavily bordered laterally with blackish brown extending around the posterior border. Pterothorax much wider than prothorax. Abdomen with sides of posterior half nearly parallel to segment VIII. Material from this bird appears to be quite scarce. Carriker's (1902) published record of a collection of 1 female and 1 immature female from Colorado is the only record from the United States.

Measurements: *Brüelia infrequens* (Carriker, 1902)
(from Carriker, 1902)

	♀
Head Length	.46
Head Width	.29
Abdomen Width	.40
Total Length	1.45

Brüelia interposita (Kellogg, 1899)
Nirmus interpositus Kellogg, 1899. Occ. Pap. Calif. Acad. Sci., 6: 23, pl. 2, fig. 7.
Type host: *Dendroica petechia* (Linnaeus)--Yellow Warbler.

Lateral margins of head weakly convex: trabeculae extend to the 1st antennal segment and are uncolored. Temples with a single long seta; occipital margin bare, very flatly convex; forehead and temporal margins narrowly bordered with dark brown. Prothorax short and wide with 1 long seta in each posterolateral angle. Pterothorax short, lateral margins dark brown; 6 or 7 long setae on the posterodorsal margin on either side of the midline. Abdomen narrow with rather broad dark brown lateral bands.

According to Carriker (1957) this specimen was collected in Panama. I have found no records of its collection in the United States and have not collected the Yellow Warbler during the course of this study.

Brüelia limbata (Burmeister, 1838)
Nirmus limbatus Burmeister, 1838. Handb. Ent., 2: 429.
Docophorus serenus Rudow, 1869. Beitr. Kenntn. Malloph.: 16.
Type host: *Loxia curvirostra* Linnaeus--Red Crossbill.

I have no description of this species of *Brüelia*.

Brüelia longifrons Carriker, 1956
Brüelia longifrons Carriker, 1956. Florida Ent., 39: 81, fig. 61.
Type host: *Parus atricapillus* (Linnaeus)--Black-capped Chickadee.

A large species, the female measuring 1.82 mm in length. Preantennal region very long with flatly convex sides; the buccal canal narrows abruptly at the posterior edge of the small, semilunar anterior plate, then gradually narrows to a very constricted opening into the long narrow buccal cavity; gular plate extends beyond occipital margin. Pterothorax with straight sides, diverging; thoracic carinae deeply colored. Abdomen with narrow pleurites.

Described by Carriker (1956) from a single female collected in Kansas. It is the only published record of this species. I have not collected this species in 25 examinations of the Black-capped Chickadee.

Brüelia nebulosa (Burmeister, 1838)
Nirmus nebulosa Burmeister, 1838. Handb. Ent., 2: 429.
Docophorus ochroleucus Nitzsch, 1874. *In Giebel*, Insecta Epizoa: 90.
Bruelia chitlatiyar Ansari, 1956. Indian J. Ent., 17: 395.
Type host: *Sturnus vulgaris* Linnaeus--Starling.

A lightly sclerotized species. Premarginal carina interrupted medially; temples rounded with 1 long seta on each side; trabeculae short, transparent, not reaching to the end of the 1st antennal segment, occipital margin almost straight. Prothorax with sides curved, a short seta in each posterolateral angle. Pterothorax with 5 long setae on each side on the posterodorsal margin.

This is a very common parasite of the starling. I have examined 56 starlings from various localities in New England and have found *Brüelia nebulosa* on 33 of these birds.

Brüelia nivalis (Giebel, 1874)
Nirmus nivalis Giebel, 1874. Insecta Epizoa: 140.
Type host: *Plectrophenax nivalis* (Linnaeus)--Snow Bunting.

I have no information concerning this species of Mallophaga.

Brüelia ornatissima (Giebel, 1874)
Nirmus ornatissimus Giebel, 1874. Insect Epizoa: 144.
Nirmus illustris Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 494, pl. 67, fig. 4.
Type host: *Agelaius phoeniceus* (Linnaeus)--Red-winged Blackbird.

Head truncate, very slightly convex in front with 2 or 3 very short indistinct marginal hairs; trabeculae small and weak; temporal margin with 2 bristles and a weak hair; antennae with segment I colorless, others dark brown; occipital margin straight. Prothorax with flatly rounded sides and rounded posterior angles each with 1 small seta; anterior angles with a dark brown blotch. Pterothorax with 5 weak setae in each lateral 4th of the posterior margin; small black linear blotches in the anterior angles. Abdomen elongate with posterior angles of segments projecting slightly, pointing backward and each with 2 setae; lateral bands narrow, black; large median brown blotches on segments I-VII nearly crossed by a transverse linear colorless space.

Although I did not find *Brüelia ornatissima* on the Red-winged, I found it to be a common parasite of the Grackle, *Quiscalus quiscula* (Linnaeus). I have made 40 examinations of this bird, all from New Hampshire.

Specimens	Host	Locality	Date	Collector
--	*Quiscalus quiscula*	Durham, NH	III-2-1963	--
--	" "	" "	III-3-1963	--
--	" "	" "	VIII-31-1964	J.E.K.
--	" "	" "	VII-22-1965	J.E.K.

The number of individual Mallophaga on a single bird ranged from 1-136.

Brüelia pallidula (Harrison, 1916)

Nirmus pallidus Osborn, 1896 (*nec* Piaget, 1880). Bull. U. S. Bur. Ent. (n. s.), 5: 227.

Degeeriella pallidula Harrison, 1916. Parasitology, 9: 120 (*nn* for *N. pallidus* Osborn, 1896).

Type host: *Pheucticus ludovicianus* (Linnaeus)--Rose-breasted Grosbeak.

Head bluntly conical in front; lightly sclerotized along premarginal carinae and mandibles; trabeculae pointed, transparent, reaching to the end of the 1st antennal segment; temples with a single seta. Prothorax small; pterothorax with 6 long setae on each side arranged along the posterodorsal margin. Legs colorless. Abdomen colorless except for the light brown pleurites.

Specimens	Host	Locality	Date	Collector
4 imm.	*Pheucticus ludovicianus*	Augusta, Me.	IV-?-1964	A.E.B.
1 ♀	" "	Durham, NH	1948	E.O.Hooghkirk

Brüelia picturata (Osborn, 1896)

Nirmus picturatus Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.) 5: 226.

Type host: *Sturnella magna* (Linnaeus)--Eastern Meadowlark.

Head elongate; premarginal carinae dark except at apex; temporal carinae narrow; antennae with joints subequal, annulate. Posterior margin of prothorax black; pterothorax with broad, black margin on segments I-VII, broad ventral median bands on segments I-V, faint on I-II, not separated by a median clear space, but having a transverse light band.

Osborn (1896) records this species from Iowa; Geist (1931) Ohio; Thompson (1934) Quebec; Peters (1936) Maryland and South Carolina; and Whitehead (1954) Quebec.

Brüelia rotundata (Osborn, 1896)

Nirmus rotundatus Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 226.

Type host: *Corvus brachyrhynchos* Brehm--Common Crow.

Head wider than long; premarginal carinae dark modified medially, with anterior hyaline margin; antennae slightly dimorphic, the male 1st antennal segment more robust than in the female. Tergal plates II-VIII approximate, IX entire.

Osborn (1896) records this species from Iowa; Peters (1928) Ohio; Peters (1936) Maryland and New York; Emerson (1940) Oklahoma; Brown and Wilk (1944) Alberta; Stirrett (1952) Ontario; Whitehead (1954) Quebec; and Ansari (1957) California and Kansas.

Measurements: *Brüelia rotundata* (Osborn, 1896)

	♂	♀
Head Length	.46	.52
Head Width	.55	.64
Prothorax	.36	.37
Pterothorax Width	.60	.66
Abdomen Length	.91	1.35
Abdomen Width	.81	.87
Total Length	1.77	2.25

Specimens	Host	Locality	Date	Collector
1 slide	*Corvus brachyrhynchos*	Middletown,Conn.	IX-6-1925	O.L.Austin,Jr. (USNM)
--	" "	Mt. Carmel,Conn.	III-28-1943	G.H.Plumb
--	" "	N. Haven, Conn.	III-27-1937	G.H.Plumb
1 slide	" "	Durham, NH	II-?-1948	E.O.Hooghkirk
--	" "	Wakefield, NH	IX-14-1964	G.L.Walker
--	" "	--	--	UNH Coll.

Brüelia subis (Carriker, 1963a)
Hirundiniella subis Carriker, 1963a. Rev. Brasil. Biol., 23: 315, fig. 32.
Type host: *Progne subis* (Linnaeus)--Purple Martin.

Dorsal preantennal carinae not broken near frons; inner sternal carinae very wide and extending back beyond ends of dorsal carinae, and forward to anterior plate, where they are fused with the dorsal carinae. Abdominal chaetotaxy long.

Brüelia subtilis (Nitzsch, 1874)
Nirmus subtilis Nitzsch, 1874. *In Giebel*, Insecta Epizoa: 137.
Brüelia subtilis obligata Eichler, 1954. Nach. Natur. Mus. Aschaffenburg, 42: 63, pl. 13, fig. 6.
Type host: *Passer domesticus* (Linnaeus)--House Sparrow or *Passer montanus* (Linnaeus)--European Tree Sparrow.

I have no description of this species of Mallophaga.

Wilson (1958) collected *B. subtilis* on 8 of 64 House Sparrows in Kentucky.

Brüelia tenuis (Burmeister, 1838)
Nirmus tenuis Burmeister, 1838. Handb. Ent., 2: 429.
Type host: *Riparia riparia* (Linnaeus)--Bank Swallow.

I have no data on this species of *Brüelia* and have been unable to collect the Bank Swallow, *Riparia riparia*.

Brüelia vulgata (Kellogg, 1896)

Nirmus vulgatus Kellogg, 1896. Occ. Pap. Calif. Acad. Sci., 6: 496, pl. 67, fig. 5.

Type host: *Junco hyemalis* (Linnaeus)--Slate-colored Junco.

Head conical, with narrow parabolic front; trabeculae very small and colorless; temporal margin with 1 long hair; occipital margin straight; entire head narrowly bordered along lateral margins with dark brown, turning inward at antennal fossae. Prothorax narrow, quadrangular, with a long seta in each posterolateral angle; narrow lateral blackish border; pterothorax almost as wide as head; 6 setae along each lateral 3rd of posterodorsal margin. Abdomen elongate, slender, with 1 weak seta in each posterior angle; distinct dark brown lateral bands and paler broad, rectangular transverse blotches.

Specimens	Host	Locality	Date	Collector
1 slide	*Junco hymenalis*	Bar Harbor, Me.	III-27-1938	M.Sullivan
1 slide	" "	Milton, Mass.	XII-11-1948	R.M.Hinchmon (MCZ)
1 slide	" "	Durham, NH	III-6-1948	E.O.Hooghkirk

Brüelia zeropunctata zeropunctata Ansari, 1957

Brüelia longifrons longifrons Ansari, 1956 (*nec* Carriker, 1956). Biologia, 2: 121, figs. 43-47.

Brüelia zeropunctata zeropunctata Ansari, 1957. Pakistan J. Health, 6: 270 (*nn* for *B. longifrons longifrons* Ansari, 1956).

Type host: *Hylocichla ustulata* (Nuttall)--Swainson's Thrush.

Head about as wide as long approaching conical form; clypeal region more or less flat in front and almost straight laterally; temples moderately dilated with a single long seta; gular plate well developed. Prothorax with 1 long seta in each posterolateral angle. Pterothorax with 1 short and 1 long seta in each posterolateral angle; 5 long setae on each side along the posterodorsal margin. Abdominal tergites II-VIII with 1 tergocentral seta; tergite IX with 6 small irregular setae.

Ansari (1956) reports this species from Wisconsin.

There is a subspecies of *B. zeropunctata*, *Brüelia zeropunctata antiqua* Ansari, 1956, found on the Hermit Thrush, *Hylocichla guttata* (Pallas).

Specimens	Host	Locality	Date	Collector
2 ♀, 5 imm.	*Hylocichla guttata*	Bartlett, NH	V-23-1964	J.E.K.

CAMPANULOTES

Campanulotes Keler, 1939. Nova Acta Leop. Carol. (n. f.), 8: 157.

Type species: *Goniocotes compar* (Burmeister, 1838).

Head circumfasciate with an obvious semilunar chitinous ridge anterior to the mandibles. Antennae filiform and similar in the 2 sexes; clavi prominent and short; temporal lobes acutely angled, each with 2 long setae at the posterolateral angle. Posterior margin of occiput concave. Prothorax narrow. Dorsal posterior margin of the pterothorax projects over the abdomen. Abdomen of both sexes broad, oval; posterolateral angle of each segment with 2 prominent setae. The most important generic character is the bell-shaped head, to which the generic name refers. Lice of this genus are ectoparasitic on birds of the order Columbiformes.

Campanulotes bidentatus compar (Burmeister, 1838)
Goniocotes compar Burmeister, 1838. Handb. Ent., 2: 431.
Goniocotes formosanus Sugimoto, 1929. Rept. Dept. Agri. Res. Inst. Formosa, 43: 25.
Type host: Domestic Pigeon.

This is the only species of the genus known in North America. The generic description will serve to identify this species. It has been reported by Wilson (1928) from New York, Peters (1928) Ohio, Emerson (1940) Oklahoma, Brimley (1942) North Carolina, Brown and Wilk (1944) Alberta, and Whitehead (1954) Quebec.

Specimens	Host	Locality	Date	Collector
--	Domestic pigeon	Bar Harbor, Me.	XI-?-1939	A.E.B.
1 slide	" "	Portland, Me.	II-10-1958	R.L.Blickle
1 slide	" "	Amherst, Mass.	II-29-1940	M.E.Smith (USNM)
1 slide	" "	S. Hadley, Mass.	--	E.Boyd
--	" "	Durham, NH	X-31-1962	W.J.Morse
--	" "	Durham, NH	IX-20-1965	J.E.K.
--	" "	Concord, NH	II-19-1964	--

CARDUICEPS

Carduiceps Clay and Meinertzhagen, 1939. Ann. Mag. Nat. Hist., (11), 4: 451.
Type species: *Degeeriella complexiva* (Kellogg and Chapman, 1899) (A synonym of *Nirmus zonarius* Nitzsch, 1866).

Head with broad hyaline margin arising from clypeal suture; clypeal and internal bands fusing at their anterior ends; clypeal signature large. Dorsal antennal bands passing inwards and downwards to form a narrow suture on each side of the preantennal region. Heavily sclerotized transverse antennal band across head at the level of the mandibles; dorsal and ventral occipital bands present. Pterothorax short with lateral margins not divergent. Abdomen with segment I small; paratergal plates without elongated re-entrant heads and bearing anterior and posterior inwardly directed processes; the posterior process continued across tergal plate as a thickened bar, giving the characteristic appear-

ance to the abdomen. Tergal plates, except segment I, entire and transversely continuous. Male abdomen with segment IX much reduced, not protruding and scarcely demarcated from segment VIII.

Carduiceps meinertzhageni Timmermann, 1954a

Carduiceps meinertzhageni Timmermann, 1954a. Ann. Mag. Nat. Hist., (12), 7: 44, fig. 6b.
Type host: *Erolia alpina* (Linnaeus)--Dunlin.
Other New England host:
Erolia maratima (Brünnich)--Purple Sandpiper.

Male genitalia characterized by the long basal plate, which does not extend as far forward as the penis. The endomeral complex is inverted, narrow and bottle shaped; parameres short, broad and strongly curved. Female similar to male but larger.

Measurements: *C. meinertzhageni* ex. *Erolia alpina*

	♂ *		3 ♀	
Head Length	.32 - .35	.36	.37	.36
Head Width	.26 - .28	.30	.30	.30
Prothorax Width	-	.16	.16	.16
Pterothorax Width	-	.24	.22	.22
Abdomen Length	-	1.12	.93	1.09
Abdomen Width	-	.39	.40	.40
Total Length	1.24 - 1.31	1.71	1.53	1.71

* From Timmermann (1954a) (Range)

Specimens	Host	Locality	Date	Collector
3 ♀	*Erolia alpina*	Hampton, NH	X-10-1964	J.E.K.
2 ♀	*Erolia maritima*	" "	X-24-1965	B.Barrett

Measurements: *C. meinertzhageni* ex. *Erolia maritima*

	2 ♀	
Head Length	.35	.37
Head Width	.28	.30
Prothorax Width	.15	.15
Abdomen Length	.93	1.06
Abdomen Width	.40	.40
Total Length	1.50	1.68

Carduiceps zonarius (Nitzsch, 1866)

Nirmus zonarius Nitzsch, 1866. Z. ges. NatWiss., 28: 274.
Nirmus complexivus Kellogg and Chapman, 1899. Occ. Pap. Calif. Acad. Sci., 6: 75, pl. 6, fig. 3.
Carduiceps eroliae Carriker, 1956. Florida Ent., 39: 123, figs. 68-70b.
Carduiceps pusillus Carriker, 1956. Florida Ent., 39: 125, figs. 70a, 71 and 72.
Type host: *Erolia minuta* (Leisler).

New England hosts:
Calidris canutus (Linnaeus)--Knot.
Erolia melanotos (Vieillot)--Pectoral Sandpiper.
Erolia fuscicollis (Vieillot)--White-rumped Sandpiper.
Erolia bairdii (Coues)--Baird's Sandpiper.
Erolia minutilla (Vieillot)--Least Sandpiper.
Ereunetes pusillus (Linnaeus)--Semipalmated Sandpiper.
Crocethia alba (Pallas)--Sanderling.

This species has been reported by Kellogg and Chapman (1899) from the Sanderling and the Least Sandpiper in California, Peters (1928) reports it from Ohio on Baird's Sandpiper, Pectoral Sandpiper, Least Sandpiper, Semipalmated Sandpiper and Sanderling. Geist (1931) reports it on the White-rumped Sandpiper in Ohio, Twinn (1935) in Manitoba on the Semipalmated Sandpiper, Peters (1936) records this species on the Knot, Florida; Pectoral Sandpiper, Virginia; White-rumped Sandpiper, Massachusetts, Ohio; Baird's Sandpiper, Massachusetts, Ohio; Least Sandpiper, Washington, D. C., South Carolina; Semipalmated Sandpiper, South Carolina; Sanderling, Florida, Illinois, Massachusetts, New Hampshire, Ohio, South Carolina and Virginia. Procter (1938) on the Sanderling in Maine, Brimley (1938) on the Pectoral Sandpiper, White-rumped Sandpiper and Sanderling in North Carolina, Stirrett (1952) on the Pectoral Sandpiper and Least Sandpiper in Ontario, and Carriker (1956) on the White-rumped Sandpiper and Semipalmated Sandpiper in Kansas.

Specimens	Host	Locality	Date	Collector
1 slide	*Calidris canutus*	Seabrook, NH	IX-16-1935	L.R.Nelson (USNM)
4 ♀, 2 ♂	*Erolia melanotos*	Brunswick, Me.	IX-13-1965	H.Tyler
1 slide	*Erolia fuscicollis*	Marshfield,Mass.	IX-25-1928	MSB
2 slides	" "	N.Eastham,Mass.	X-26-1930	H.S.Peters (USNM)
1 slide	*Erolia bairdii*	Ipswich,Mass.	IX-16-1931	USNM
1 slide	" "	" "	IX-16-1931	MSB
4 ♀, 2 ♂	*Ereunetes pusillus*	Hampton, NH	X-10-1964	J.E.K.
1 slide	" "	Seabrook, NH	IX-29-1936	USNM
1 slide	" "	Hamrock ?,Mass.	X-11-1923	J.O.Smith (USNM)
1 slide	*Crocethia alba*	Nahant, Mass.	IX-24-1914	USNM
1 slide	" "	" "	IX-24-1914	MSB
1 slide	" "	Marshfield,Mass.	IX-28-1928	MSB
1 ♀	" "	Charlestown,RI	VII-24-1961	URI Coll.

Carduiceps sp.

I have collected a single female *Carduiceps* sp. from *Limosa haemastica* (Linnaeus)--Hudsonian Godwit, Plum Island, Essex County, Massachusetts, October 31, 1964.

Measurements:	♀
Head Length	.45
Head Width	.40
Prothorax Width	.21
Pterothorax Width	.30
Abdomen Length	1.20
Abdomen Width	.54
Total Length	1.95

CHELOPISTES

Chelopistes Keler, 1939. Nova Acta Leop. Carol. (n. f.), 8: 180.
Type species: *Rhopaloceras stylifer* (Nitzsch, 1818) (A synonym of *Pediculus meleagridis* Linnaeus, 1758).
Virgula Clay, 1941 (*nec* Simpson, 1900). Parasitology, 33: 119.
Type species: *Goniodes meleagridis* (Linnaeus, 1758).
Trichomedea Carriker, 1945a. Rev. Acad. Colombia Sci., 6: 365.
Type species: *Trichomedea setosa* Carriker, 1945a.

Clay (1941) considers the form of the male clavus as the most constant and typical generic character. Male clavi transparent and consist of a basal portion prolonged distally into a fine point; in the female the clavi are normal. In known species the antennae are sexually dimorphic, the male having the distal pre-axial angle of the 3rd segment produced. Pterothorax quite large with straight divergent lateral margins and a central sternal plate bearing hairs. Abdomen elongated and somewhat pointed posteriorly with segment I (true segment II) small in both sexes. Segments VIII and IX (true segments IX and X) of male are fused and elongated in an anteroposterior plane. In this genus the genital opening is ventral. Paratergal plates well marked with complicated re-entrant heads.

Chelopistes meleagridis (Linnaeus, 1758)
Pediculus meleagridis Linnaeus, 1758. Syst. Nat., ed. 10: 613.
Philopterus stylifer Nitzsch, 1818. Germar's Mag. Ent., 3: 294 (*nn* for *P. meleagridis* Schrank, 1781).
Rhopaloceras styliferum Taschenberg, 1882. Nova Acta Leop. Carol., 44: 47.
Type host: *Meleagris gallopavo* Linnaeus--Turkey.

This is the only species of the genus found in New England. It is easily distinguished from all other species of the genus by the temples in both sexes being greatly prolonged distally. It has been reported by Wilson (1928) from New York, Peters (1928) Ohio, Brimley (1938) North Carolina, Emerson (1940) Oklahoma, and by Brown and Wilk (1944) from Alberta.

COLUMBICOLA

Columbicola Ewing, 1929. Manual External Parasites: 190.
Type species: *Pediculus columbae* Linnaeus, 1758.
Soricella Clay and Meinertzhagen, 1937. Entomologist, 70: 276.
Type species: *Soricella streptopeliae* Clay and Meinertzhagen, 1937.
Phagopterus Freire and Duarte, 1944. Bol. Soc. Brasil. Med. Vet., 13: 13.
Type species: *Phagopterus columbae* Freire and Duarte, 1944 (A synonym of *Pediculus columbae* Linnaeus, 1758).

Head long and slender; forehead with sides almost straight; clypeal suture present; clypeus rounded and bearing above 2 pairs of spines, the front pair being flattened and porrect and the hind pair being recurved. Trabeculae small; antennae showing sexual dimorphism; those of male with the 3rd segment bearing an appendage; postantennal region of head slender, temples poorly developed and rounded. Pterothorax rectangular and bearing a tuft of long setae on each posterolateral angle. Abdomen very slender with heavily sclerotized pleural plates; genital armature of male with broad basal plate, almost straight, free parameres and poorly developed endomeres.

Mallophaga of this genus parasitize birds of the order Columbiformes.

Columbicola columbae (Linnaeus, 1758)
Pediculus columbae Linnaeus, 1758. Syst. Nat. ed. 10: 614.
Lipeurus baculus Nitzsch, 1818. Germar's Mag. Ent., 3: 293.
Lipeurus antennatus Giebel, 1874. Insecta Epizoa: 213.
Phagopterus columbae Freire and Duarte, 1944. Bol. Soc. Brasil. Med. Vet., 13: 14, figs 1-3.
Type host: Domestic Pigeon.

This may well be the most common mallophagan found in any collection and it is certainly the most thoroughly studied from a physiological point of view. Osborn (1896) states that it is not strange that it attracted the attention of early naturalists, as it occurs in wonderful abundance on almost every pigeon that may be examined, and its striking appearance, due to the extreme slenderness of the body, would at once catch the eye of the observer.

Specimens	Host	Locality	Date	Collector
1 slide	Domestic Pigeon	Bar Harbor, Me.	IX-?-1939	A.E.B.
1 slide	" "	Portland, Me.	II-10-1958	R.L.Blickle
1 slide	" "	Amherst,Mass.	II-29-1940	M.E.Smith (USNM)
--	" "	Boston, Mass.	VI-19-1962	J.E.K.
1 slide	" "	Wellesley, Mass.	V-6-1892	MCZ
1 slide	" "	Massachusetts	I-29-1909	MCZ
1 slide	" "	Durham, NH	X-31-1962	A.H.Mason & W.J.Morse
--	" "	" "	IX-21-1965	J.E.K.

Columbicola macrourae (Wilson, 1941)

Esthiopterum macrourae Wilson, 1941. J. Parasit., 27: 262, figs. 5-8.

Type host: *Zenaidura macroura* (Linnaeus)--Mourning Dove.

Normally only 1 species of Columbicola is found upon a single host species. *Columbicola macrourae* appears to be restricted to the eastern part of the range of *Zenaidura macroura*, and is apparently replaced in the western part of the host range by *Columbicola baculoides* (Paine, 1912). This is one of the few examples of geographical distribution to be found in the Mallophaga. In almost all other cases mallophagan distribution is the same as host distribution.

CRASPEDONIRMUS

Craspedonirmus Thompson, 1940. Ann. Mag. Nat. Hist., (11), 6: 516.

Type species: *Docophorus frontatus* Nitzsch, 1866. (A synonym of *Docophorus colymbinus* Denny, 1842).

Colymbicola Uchida, 1948. Jap. Med. J., 1: 309.

Type species: *Docophorus graviceps* Kellogg, 1896. (A synonym of *Docophorus colymbinus* Denny, 1842).

Head broad, conical with rounded temples and prominent forehead; dorsal anterior plate shield shaped, concave in front, posteriorly with long acuminate tip; trabeculae small; antennae short, filiform and similar in the 2 sexes; lateral margins of head almost straight; posterior margin almost straight. Main feature of the head is its division into 2 by a dorsal line running transversely just posterior to the base of the antennae. Prothorax small; pterothorax larger, but neither as wide as the head at its widest point. Abdomen slightly more than 1 1/2 times as long as wide; 4th segment broadest; transverse bands continuous; pleurites strongly pigmented and sclerotized; tergites separated from the pleurites by a narrow clear area, almost rectangular; terminal segments of female bilobed; male genitalia small, parameres hooked at distal end. Members of this genus are parasitic on the order Gaviiformes.

Craspedonirmus colymbinus (Denny, 1842)

Docophorus colymbinus Denny, 1842. Mon. Anopl. Brit.: 43 and 80, pl. 8, fig. 8.

Nirmus frontatus Nitzsch, 1866. *In Giebel*, Z. ges. NatWiss, 28: 378.

Docophorus bisetosus Piaget, 1885. Les Pediculines, Supplement: 17, pl. 2, fig. 6.

Docophorus graviceps Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 82, pl. 3, fig. 3.

Docophorus atricolor Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 93, pl. 3, fig. 9.

Type host: *Gavia stellata* (Pontoppidan)--Red-throated Loon.

The only constant morphological difference between this species and the following is that *C. colymbinus* possesses at least 4 long setae on abdominal sternites III-VII, while *C. immer* (see below) possesses 2 long setae on abdominal sternites III-VII.

Kellogg (1896) reported this species from California, and Thompson (1940) reports examining this species from a Diver collected in North American waters.

Craspedonirmus immer Emerson, 1955a

Craspedonirmus immer Emerson, 1955a. Ann. Mag. Nat. Hist., (12), 8: 720.

Type host: *Gavia immer* (Brünnich)--Common Loon.

Peters (1936) reports this species from New Hampshire; Whitehead (1954) from Quebec and Emerson (1955a) described this species from a holotype male and an allotype female collected at Boston, Massachusetts, 2 females from California, 1 male and 1 female from Washington, D. C., 2 females and 1 male from Pennsylvania, all in the British Museum. He also reports 23 females and 2 males from Isles of Shoals, New Hampshire, in the USNM.

Specimens	Host	Locality	Date	Collector
3♀ (paratypes)	*Gavia immer*	Isles of Shoals,NH	VI-1-1934	L.R.Nelson (MCZ)

CRASPEDORRHYNCHUS

Craspedorrhynchus Keler, 1938. Arb. Morph. Tax. Ent. Berlin-Dahlem, 5: 239.

Type species: *Docophorus platystomus* Burmeister, 1838.

Falcoecus Clay and Meinertzhagen, 1938. Entomologist, 71: 275.

Type species: *Philopterus aquilinus* (Denny, 1842).

Head large with hyaline margin arising at the level of the clypeal suture. Dorsal anterior plate large and distinct; clypeal suture prolonged inward on the dorsal surface of each side and passing down the median line of the head as a narrow suture to the level of the antennal fossae. Antennal bands of the head terminating in a point some distance beyond the anterior margin of the dorsal anterior plate. Trabeculae large. Antennae filiform and similar in the 2 sexes. Abdomen short and rounded with tergal plates I-VII widely separated medially in both males and females. Posterior margin of terminal abdominal segment rounded in males, emarginate in females.

Members of this genus are parasitic on birds of the order Falconiformes excluding the family Falconidae.

Craspedorrhynchus americanus Emerson, 1960

Craspedorrhynchus americanus Emerson, 1960. Proc. Biol. Soc. Wash., 73: 40, figs. 9, 13, and 17.

Type host: *Buteo jamaicensis* (Gmelin)--Red-tailed Hawk.

In the males there are 14 or fewer long setae on the posterior margin of the pterothorax; abdominal sternite VI with a sparse row of setae; abdominal tergite II with more than 14 long setae and abdominal tergite VIII with 8 long setae. The females with the posterior margin of the pterothorax with 12 long setae; the posterior margin of the vulva with 10 medium length setae and the posterior margin of tergite VIII with 14 long setae.

Emerson (1960) records this species from Mississippi, Wisconsin, Utah, Pennsylvania, New Hampshire, New York and New Jersey.

Specimens	Host	Locality	Date	Collector
7♀, 1♂	*Buteo jamaicensis*	Lincoln, Me.	X-28-1935	W.J.Clayton
10♀, 5♂	" "	" "	X-24-1940	W.J.Clayton
1 slide	" "	Richmond,Mass.	X-27-1925	BMS
1 slide	" "	Winchester,NH	IX-25-1933	L.R.Nelson (USNM)

Craspedorrhynchus aquilinus (Denny, 1842)

Docophorus aquilinus Denny, 1842. Mon. Anopl. Brit.: 46 and 81, pl. 2, fig. 7.

Docophorus chrysophthalmi Denny, 1842. Mon. Anopl. Brit.: 46 and 99, pl. 2 fig. 3.

Philopterus triangulifer Gervais, 1844. Hist. Nat. Ins. 3: 342, pl. 49, fig. 4.

Docophorus orbicularis Rudow, 1870. Z. ges. NatWiss., 35: 460.

Docophorus pictus Giebel, 1874. Insecta Epizoa: 74.

Type host: *Aquila chrysaetos* (Linnaeus)--Golden Eagle.

The Golden Eagle is not a common New England bird.

Specimens	Host	Locality	Date	Collector
2♀, 2♂, 9 imm.	*Aquila chrysaetos*	Goffstown, NH	X-23-1961	Lacaillade

Craspedorrhynchus buteonis (Packard, 1870)

Docophorus buteonis Packard, 1870. Amer. Nat., 4: 93, pl. 1, fig. 3.

Type host: *Buteo lineatus* (Gmelin)--Red-shouldered Hawk.

In the males there are 4 long setae on the thoracic sternal plate between coxae II and III; genital sternal plate with 5 long setae on each side in indentations and median setae on the genital plate are present. The females have the posterior margin of tergite VIII with 12 long setae and the posterior central margin of abdominal sternite III with 20 long setae.

Specimens	Host	Locality	Date	Collector
1 slide	*Buteo lineatus*	Massachusetts	IV-10-1880	MCZ
4 ♂	" "	Hanover, NH	V-20-1892	C.M.Weed
1 slide	" "	" "	V-21-1892	C.M.Weed (USNM)

The collection of May 20, 1892 in the collection of the Entomology Department of the University of New Hampshire contains 4 males identified by H. Osborn. He mentions this collection in "Insects Affecting Domestic Animals" (p. 218) and it is mentioned by Kellogg (1899a: 47).

Craspedorrhynchus dilatatus (Rudow, 1869)

Docophorus dilatatus Rudow, 1869. Beitr. Kenntn. Malloph.: 14.
Docophorus eurygaster Giebel, 1874. Insecta Epizoa: 69.
Docophorus taurocephalus Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 471, pl. 65, fig. 1.
Craspedorrhynchus buteolagopi Merisua, 1945. Ann. Ent. Fenn., 2: 104, figs. 1, 2c, and 3c.
Type host: *Buteo lagopus* (Pontoppidan)--Rough-legged Hawk.

As in *C. buteonis* the males of this species have 4 long setae on the thoracic sternal plate between coxae II and III; but the genital sternal plate has 4 long setae on each side instead of 5. The females resemble *C. buteonis* but have the posterior central margin of abdominal sternite III with 14 long setae.

Specimens	Host	Locality	Date	Collector
1 slide	*Buteo lagopus*	Winchester, NH	I-7-1934	L.R.Nelson (USNM)

Craspedorrhynchus haematopus (Scopoli, 1763)

Pediculus haematopus Scopoli, 1763. Ent. Carniolica: 381.
Pediculus strigis J. C. Fabricius, 1775 (*nec* Pontoppidan, 1763). syst. Ent.: 806 (*nn* for *P. haematopus* Scopoli, 1763).
Docophorus platyrhynchus Nitzsch, 1818. Germar's Mag. Ent., 3: 290 (*nn* for *P. haematopus* Scopoli, 1763).
Pediculus tinnunculi Latreille, 1818 (*nec* Linnaeus, 1758). *In Guerin*, Encyc. Meth.: 128, pl. 254, fig. 1.
Docophorus asturinus Mjoberg, 1910. Ark. Zool., 6: 112, pl. 1, figs. 6-7.
Type host: *Accipiter gentilis* (Linnaeus)--Goshawk.

This species is separated from all other members of the genus by the presence of 16 or more long setae on the posterior margin of the pterothorax in the male and 20 or more in the female.

Specimens	Host	Locality	Date	Collector
1 slide	*Accipiter gentilis*	Martha's Vineyard,Mass.	XI-10-1926	A.Keneston (BMS)

Craspedorrhynchus halieti (Osborn, 1896)

Docophorus halieti Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 218.

Type host: *Haliaeetus leucocephalus* (Linnaeus)--Bald Eagle.

The males of this species are characterized by having abdominal tergite II with more than 14 long setae and abdominal tergite VIII with 10 long setae. The females have the posterior margin of the pterothorax with 12 long setae and the posterior margin of the vulva with 14 medium length setae.

Peters (1936) reports this species from Alabama and Washington, D. C. and Stirrett (1952) from Ontario.

Craspedorrhynchus subhaematopus Emerson, 1960

Craspedorrhynchus subhaematopus Emerson, 1960. Proc. Biol. Soc. Wash., 73: 39, figs. 5-8.

Type host: *Accipiter cooperii* (Bonaparte)--Cooper's Hawk.

The males have the thoracic sternal plate between coxae II and III with 2 long setae and pleural plates of abdominal segment IV each with at least 7 long setae. Females with 14 long setae on the posterior margin of the pterothorax and pleural plates of abdominal segment VII each with 16 long setae.

Emerson (1960) reports this species from Maryland, Florida, and Oregon.

Specimens	Host	Locality	Date	Collector
1 slide	*Accipiter cooperii*	Branford, Conn.	--	Cornell Coll.

CUCLOTOGASTER

Cuclotogaster Carriker, 1936. Proc. Acad. Nat. Sci. Philad., 88: 67.

Type species: *Cuclotogaster laticorpus* Carriker, 1936 (A synonym of *Lipeurus heterographus* Nitzsch, 1866).

Gallipeurus Clay, 1938. Proc. Zool. Soc. London, (B), 108: 135.

Type species: *Lipeurus heterographus* Nitzsch, 1866.

Head longer than wide; front of head with hyaline margin and dorsal anterior plate lacking; trabeculae minute; antennae of female filiform; antennae of male with 1st segment enlarged and 3rd segment with an appendage; eye prominent with a long hair; postantennal region only slightly expanded. Prothorax small, sides divergent; pterothorax very much shortened, with sides broadly divergent and posterior margin not angulated; dorsally 4 patches of long setae on the posterior margin. Abdomen slender to elongate-oval, spiracles present on segments II-VII; lateral angles on female abdominal segments sharp and projecting. Mallophaga of this genus are ectoparasitic on birds of the order Galliformes.

Cuclotogaster heterographus (Nitzsch, 1866)

Lipeurus heterographus Nitzsch, 1866. *In Giebel*, Z. ges. NatWiss., 28: 381.

Goniocotes burnetti Packard, 1870. Amer. Nat., 4: 94, fig. 26.

Lipeurus pallidus Giebel, 1874. Insecta Epizoa: 219.

Lipeurus heterographus major Piaget, 1880. Les Pediculines: 362.

Goniocotes eynsfordii Theobald, 1896. Parasitic Diseases Poultry: 26, fig. 8.

Cuclotogaster laticorpus Carriker, 1936. Proc. Acad. Nat. Sci. Philad., 88: 67, pl. 1, fig. 2.

Type host: Chicken.

This species is known as the "chicken head louse" and has a world-wide distribution. It is common throughout the United States and has been recorded by Wilson (1928) New York, Peters (1928) Ohio, Procter (1938) Maine, Brimley (1938) North Carolina, Emerson (1940) Oklahoma, and Brown and Wilk (1941) reported it on pheasant chicks in Alberta, Canada.

C. heterographus is the only species of the genus found in New England, therefore, the genus description will serve for identification of this species.

Specimens	Host	Locality	Date	Collector
3 ♂	Chicken	Lincoln, Me.	Fall 1940	W.J.Clayton
5 ♀	"	Danville, NH	IV-23-1956	--
11♀ , 7♂	"	Durham, NH	I-30-1922	P.R.Lowry

CUCULICOLA

Cuculicola Clay and Meinertzhagen, 1939a. Entomologist 72: 165.

Type species: *Degeeriella laterostris* (Burmeister, 1838).

Head circumfasciate; no lateral indication of clypeal suture, but with a preantennal dorsal curved transverse suture. Clavi small; no occipital bands or signature. Pterothorax showing lateral indication of meso-metathoracic junction; meso- and metasternal hairs present. Abdomen narrow and elongate; segment I small; tergal plates II-VI separated medially; sternal plate central; pleurites narrow with re-entrant heads. Male with segments VIII and IX small, the latter with narrow thickened marginal band. Terminal segment of female with flattened posterior margin.

Cuculicola erythropthalmus Emerson, 1964a

Cuculicola erythropthalmus Emerson, 1964a. Ent. News, 75: 69, figs. 1-3.

Type host: *Coccyzus erythropthalmus* (Wilson)--Black-billed Cuckoo.

This is the only species of the genus found thus far on members of the family Cuculidae in New England. The Yellow-billed Cuckoo is a host for a species of this genus also. I have collected 1 male and 3 female *Cuculicola* sp. from the Yellow-billed Cuckoo but have been unable to recover *Cuculicola erythropthalmus* Emerson, 1964a, from the Black-billed Cuckoo. The genus description is sufficient to determine this species.

CUCULOECUS

Cuculoecus Ewing, 1926. Proc. Ent. Soc. Wash., 28: 148.
Type species: *Philopterus coccygi* (Osborn, 1896).

Clypeal region with a hyaline margin throughout, which in front is incurved or concave; dorsal anterior plate entire; clypeal bands not reaching the lateral margins of the head and each bearing dorsally, at its anterior end, a tuft of 3 or more long setae. Clavi large. Antennae similar in the 2 sexes. Eyes normal with evenly rounded corneas. Abdomen broad and stout; tergites of female interrupted in the middle. Genitalia of male with stout parameres and slender basal plate; endomeres fused into an endomeral plate which usually protrudes beyond the parameres; penis present, but small and not well developed. Members of this genus are parasitic on the order Cuculiformes.

Cuculoecus coccygi (Osborn, 1896)
Docophorus coccygi Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 222, fig. 143.
Docophorus latifrons occidentalis Kellogg, 1899 (*nec* 1896). Occ. Pap. Calif. Acad. Sci., 6: 6, pl. 1, figs. 5 and 8.
Type host: *Coccyzus americanus* (Linnaeus)--Yellow-billed Cuckoo.

At the present time, this is the only known species of the genus described from North America. With sufficient collecting a species of this genus should also be recovered from *Coccyzus erythropthalmus* (Wilson), the Black-billed Cuckoo.

Specimens	Host	Locality	Date	Collector
1 slide	*Coccyzus americanus*	Winchester, NH	VI-26-1935	L.R.Nelson (USNM)
1 imm.	" "	--	--	UNH

CUMMINGSIELLA

Dollabella Cummings, 1916 (*nec* Gistel, 1848). Proc. Zool. Soc. London, 1916: 675.
Type species: *Dollabella testudinarius* (Denny, 1842) (A synonym of *Pediculus ovalis* Scopoli, 1763).
Cummingsiella Ewing, 1930b. Proc. Biol. Soc. Wash., 43: 125 (*nn* for *Dollabella* Cummings, 1916).

Head roughly quadrangular, slightly longer than wide, with the anterior margin truncate and the sides of the forehead somewhat incurved. Dorsal transverse suture at the level of the antennae absent. Trabeculae well developed, short, not extending beyond the level of the 1st antennal segment. Dorsal anterior plate well developed, broadly oval, evenly rounded in front and somewhat produced posteriorly. Prothorax short, wider than long; pterothorax with lateral margins divergent and posterior margin convex. Abdomen elongate; tergites in both sexes extend across the segments and unite with the pleurites. Parameres of male genitalia slender elongate rods which turn inward in a bend and then pass straight to the distal end; penis a rod-shaped structure with large telomeres on either side.

Cummingsiella ambigua (Burmeister, 1838)
Docophorus ambiguus Burmeister, 1838. Handb. Ent., 2: 426.
Docophorus amphibolus Giebel, 1961. Z. ges. NatWiss., 18: 314 (*nn* for *D. ambiguus* Burmeister, 1838).
Docophorus nirmoides Piaget, 1880. Les Pediculines: 104, pl. 9, fig. 2.
Docophorus nirmoides major Waterston, 1912 (*nec* Kellogg, 1896). Ent. Mon. Mag., 23: 62.
Type host: *Capella gallinaga* (Linnaeus)--Common Snipe.

This is the only species of *Cummingsiella* found in New England. The genus description will serve to identify this species. I have found no published records of collections of *C. ambigua* in the United States.

DEGEERIELLA

Nirmus Nitzsch, 1818 (*nec* Hermann, 1804). Germar's Mag. Ent., 3: 291.
Type species: *Degeeriella discocephalus* (Burmeister, 1838) (By subsequent designation, Johnston and Harrison, 1911. Proc. Linn. Soc. N. S. W., 36: 326).
Degeeriella Neumann, 1906. Bull. Soc. Zool. Fr., 20: 60. (*nn* for *Nirmus* Nitzsch, 1818).
Kelerinirmus Eichler, 1940. Zool. Anz., 130: 101.
Type species: *Nirmus fuscus* Denny, 1842.

Philopteridae not exceeding 3 mm in length; usually without marked sexual dimorphism, but females larger. Head circumfasciate; marginal carina entire dorsally; ventrally it may be interrupted medially; hyaline margin may be apparent as a narrow rim around the anterior margin of the head; dorsal postantennal suture absent in all New England forms. Antennae filiform and similar in both sexes. Temporal carinae absent. Prothorax with rounded or parallel lateral margins and straight posterior margin; 1 posterolateral or posterior elongated seta on each side. Sternal plate narrowed anteriorly, normally with 3 setae on each side. Pterothorax with sides diverging. Abdomen with 9 apparent segments in the male and 8 in the female.

Clay (1958) has reviewed this genus and many of the following descriptions are from her revision.

Degeeriella discocephalus discocephalus (Burmeister, 1838)
Nirmus discocephalus Burmeister, 1838. Handb. Ent., 1: 430.
Nirmus discocephalus amblys Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 499, pl. 67, fig. 6.
Type host: *Haliaeetus albicilla* (Linnaeus)--Gray Sea Eagle.
New England host:
Haliaeetus leucocephalus (Linnaeus)--Bald Eagle.

Marginal carina thick and entire; ventral suture reaches to or nearly to inner margin of marginal carina. Posterodorsal setae of margin of pterothorax 4-6 on each side, omitting the lateral spine-like seta and the seta with sunken alveolus. Tergite II with median unsclerotized area, tergite III somewhat narrowed medially. The female of this species differs from all other *Degeeriella* in having 2, occasionally 1, seta in the middle of the anterior region of tergite IX.

Specimens	Host	Locality	Date	Collector
1 slide	*Halliaeetus leucocephalus*	Waltham, Mass.	XI-12-1921	R.H.Howe (USNM)

Degeeriella fulva (Giebel, 1874)
Nirmus fuscus Nitzsch, 1861 (*nec* Denny, 1842). *In Giebel*, Z. ges. NatWiss., 17: 525.
Nirmus fulvus Giebel, 1874. Insecta Epizoa: 124.
Nirmus angustus Giebel, 1874. Insecta Epizoa: 126.
Nirmus flavidus Giebel, 1874. Insecta Epizoa: 301.
Degeeriella giebeli Hopkins, 1947. Entomologist, 80: 77 (*nn* for *N. fuscus* Nitzsch, 1861).
Degeeriella borealis Carriker, 1956. Florida Ent., 39: 41, figs. 38 and 40b.
Degeeriella genitalis Carriker, 1956. Florida Ent., 39: 43, figs. 38 and 42.
Type host: *Aquila chrysaetos* (Linnaeus)--Golden Eagle.
Other New England hosts:
Buteo jamaicensis (Gmelin)--Red-tailed Hawk.
Buteo lineatus (Gmelin)--Red-shouldered Hawk.
Buteo lagopus (Pontoppidan)--Rough-legged Hawk.

Inner dorsal margin of marginal carina indented medially; ventral suture passes to anterior margin of head. Dorsal head sutures not apparent. Tergite II only with definite median unsclerotized indentation. Pleural thickening of segments III-VI usually with well developed re-entrant heads, inner edges comparatively straight.

Maximum and minimum measurements of specimens from *Buteo* spp. (from Clay, 1958):

♂

Head Length	.50 - .58
Head Width	.38 - .47
Prothorax Width	.23 - .30
Pterothorax Width	.38 - .48
Abdomen Length	1.00 - 1.32
Abdomen Width	.48 - .67
Total Length	1.75 - 2.23

Specimens	Host	Locality	Date	Collector
1 slide	*Buteo jamaicensis*	Harpswell, Me.	XI-28-1926	A.O.Gross (USNM)
1 slide	" "	Winchester, NH	IX-25-1933	L.R.Nelson (USNM)
1 slide	*Buteo lagopus*	Rye, NH	IX-1-1934	L.R.Nelson (USNM)
2 slides	" "	Winchester, NH	I-7-1934	L.R.Nelson (USNM)

Degeeriella fusca (Denny, 1842)

Nirmus fuscus Denny, 1942. Mon. Anopl. Brit.: 49 and 118.

Nirmus aeruginosi Denny, 1952. List Brit. Animals in Brit. Mus., pl. 11, Anoplura: 16 (*nn* for *N. fuscus* Denny, 1842).

Nirmus socialis Giebel, 1874. Insecta Epizoa: 127.

Kelerinirmus circi Boetticher and Eichler, 1954. Biol. Zbl., 73: 215.

Type host: *Circus aeruginosis* (Linnaeus).

New England host:

Circus cyaneus (Linnaeus)--Marsh Hawk.

Dorsal surface of head with an area of lighter sclerotization between the anterior dorsal setae. Inner dorsal margin of marginal carina indented medially. Tergites II-III with median indentation; central area of tergite II more strongly pigmented than lateral areas. Pleural thickening broad and strongly pigmented with dark inner line, contrasting with the rather lightly sclerotized terga but not as marked in *Circus cyaneus* as in *Circus aeruginosus*.

Peters (1936) reports this species from Alabama, New Hampshire, Pennsylvania and South Carolina; Brimley (1938) North Carolina; Emerson (1940) Oklahoma; and Whitehead (1954) from Quebec.

Specimens	Host	Locality	Date	Collector
1 ♀	*Circus cyaneus*	--	--	UNH
1 slide	" "	Cape Cod, Mass.	--	C.M.Herman
1 record	" "	Newmarket, NH	X-15-1901	E.G.Davis

Degeeriella nisus nisus (Giebel, 1866)
Nirmus nisus Giebel, 1866. Z. ges. NatWiss., 28: 364.
Type host: *Accipiter nisus* (Linnaeus).
New England host:
Accipiter striatus Vieillot--Sharp-shinned Hawk.

Inner edge of marginal carina straight or with slight median indentation; small area of dorsal thickening immediately below marginal carina; ventral suture does not reach to anterior margin of head. Marginal temporal carinae broad with many indentations. Terga II-III indented medially. Pleural thickening broad with ventral outline convex.

Measurements: *Degeeriella nisus nisus* (Giebel, 1866)
(from Clay, 1958)

(Mean)	♂
Head Length	.49
Head Width	.36
Prothorax Width	.23
Pterothorax Width	.36
Abdomen Length	.99
Abdomen Width	.48
Total Length	1.72

Specimens	Host	Locality	Date	Collector
1 slide	*Accipiter striatus*	Winchester, NH	X-22-1932	L.R.Nelson (USNM)

A subspecies of *D. nisus*, *Degeeriella nisus vagans* (Giebel, 1874), is found on the Goshawk, *Accipiter gentilis* (Linnaeus), and Cooper's Hawk, *Accipiter cooperii* (Bonaparte).

It differs from *D. nisus* in the larger average size in both sexes, the inner edge of the marginal carina, which is usually more indented medially, and the narrower and less indented marginal carinae of the temples.

Measurements: *Degeeriella nisus vagans* (Giebel, 1874)
(from Clay, 1958)

(Mean)	♂
Head Length	.54
Head Width	.42
Prothorax Width	.28
Pterothorax Width	.44
Abdomen Length	1.11
Abdomen Width	.57
Total Length	1.94

Degeeriella regalis regalis (Giebel, 1866)
Nirmus regalis Giebel, 1866. Z. ges. NatWiss., 28: 364.
Nirmus vittatus Giebel, 1874. Insecta Epizoa: 127.
Nirmus appendiculatus Piaget, 1880. Les Pediculines: 132, pl. 11, fig. 2.
Nirmus incertus Piaget, 1885. Les Pediculines, Supplement: 20, pl. 2, fig. 9.
Nirmus curvilineatus Kellogg and Kuwana, 1902. Proc. Wash. Acad. Sci., 4: 470, pl. 29, fig. 4.
Nirmus pseudophaeus Carriker, 1902. Univ. Stud. Nebr., 3: 143, pl. 3, fig. 1.
Type host: *Milvus milvus* Linnaeus.
New England host:
Buteo jamaicensis (Gmelin)--Red-Tailed Hawk.

The Red-tailed Hawk is also the host for *Degeeriella fulva*. *D. regalis regalis* superficially resembles *D. fulva* but can be separated by the number of sternocentral setae.

	Seg. II-VI
D. FULVA	normally 4
D. REGALIS	normally 6 on seg. II normally 8 on segs. III-VI

Degeeriella rufa rufa (Burmeister)
Nirmus rufus Burmeister, 1838. Handb. Ent., 2: 430.
Nirmus fasciatus Rudow, 1869. Beitr. Kenntn. Malloph.: 20.
Nirmus quadraticollis Rudow, 1870. Z. ges. NatWiss., 35: 469.
Nirmus nitzschi Giebel, 1874 (*nec* Ponton, 1871). Insecta Epizoa: 125.
Nirmus burmeisteri Giebel, 1874. Insecta Epizoa: 126.
Nirmus platyclypeatus Piaget, 1880. Les Pediculines: 145, pl. 12, fig. 1.
Kelerinirmus rufus boliviensis Eichler, 1954. Beitr. Fauna Perus, 4: 38.
Degeeriella rufa drosti Timmermann, 1955. Natturufraedingurinn 1: 49 (*nn* for *N. nitzschi* Giebel, 1874).
Degeeriella masumae Ansari, 1955. Proc.VII Pakistan Sci. Conf., Biology: 42.
Degeeriella splendidus Ansari, 1955. Proc. VII Pakistan Sci. Conf., Biology: 42.
Degeeriella falconoides Carriker, 1956. Florida Ent., 39: 42, figs. 39 and 40a.
Degeeriella rufa applanata Tendeiro, 1958a. Bol. Cult. Guine Port., 13: 33, fig. 3-2 and photos 5-6.
Degeeriella rufa subbutionis Tendeiro, 1958a. Bol. Cult. Guine Port., 13: 43, fig. 3-4 and photos 11-12.
Degeeriella rufa clayae Tendeiro, 1958a. Bol. Cult. Guine Port., 13: 47, figs. 3-5, and photos 15-16.
Type host: *Falco tinnunculus* Linnaeus.

New England hosts:
Falco peregrinus Tunstall--Peregrine Falcon.
Falco columbarius Linnaeus--Pigeon Hawk.

Inner edge of marginal carina not or slightly indented medially; ventral suture variable in form, does not reach anterior margin of head. Tergites II-III with median indentation, that of III occasionally partly occluded; tergites of segment IX in male present as 2 well marked sclerites; penial sclerite absent. Female with tergites IX-XI fused with a continuous unsclerotized area around the 2 setae on each side. Genital plate differs from all other species in North America in having a central posterior prolongation.

Measurements: *D. rufa rufa* from *Falco tinnunculus* (from Clay, 1958)

(Mean)	♂	♀
Head Length	.50	.53
Head Width	.40	.43
Prothorax Width	.26	.28
Pterothorax Width	.37	.41
Abdomen Length	1.15	1.31
Abdomen Width	.53	.59
Total Length	1.90	2.14

Specimens	Host	Locality	Date	Collector
2 ♀, 2♂	*Falco peregrinus*	Lincoln, Me.	Jan.-June, 1941	W.J.Clayton

A subspecies of *D. rufa*, *Degeeriella rufa carruthi* Emerson, 1953, is found on the Sparrow Hawk, *Falco sparverius* Linnaeus.

This subspecies has a narrower preantennal region, the anterior margin sometimes being rather pointed, but this character may be absent. In the male there is only 1 seta on each side of the ventral endomeral arm instead of 2 as in *D. rufa rufa*.

Specimens	Host	Locality	Date	Collector
1 ♂	*Falco sparverius*	Epsom, NH	VIII-19-1964	J.E.K.
1 ♂	" "	Litchfield,NH	VIII-25-1964	J.E.K.

FALCOLIPEURUS

Falcolipeurus Bedford, 1931. Rept. Vet. Res. S. Africa, 17: 290.
Type species: *Esthiopterum secretarium* (Giebel, 1874).
Trollipeurus Zlotorzycka, 1963. Ang. Parasit., 4: 3.
Genotype: *Trollipeurus eichleri* Zlotorzycka, 1963 (A synonym of *Falcolipeurus marginalis* (Osborn, 1902).

Elongate Philopteridae; adults average 3 to 5 millimeters in length. Head longer than wide; forehead rounded in front with 4 to 6 circular incrassations on lateral margins; clypeal signature absent; eyes present. Postantennal region slightly wider than preantennal region. Mandibles set between antennae. Longitudinal band on each side of ventral surface of occiput extending to base of mandible. Gular plate well developed. Antennae 5 segmented, normal in female; 1st segment enlarged with appendage on posterior margin in male, 3rd segment produced apically into a long, curved hook. Prothorax with sides subparallel; pterothorax slightly wider than prothorax. Abdomen with well developed paratergal plates on abdominal segments I-VII usually connected by less developed median bands; tergite VIII usually with complete transverse plate. Spiracles present on abdominal segments II-VII.

Falcolipeurus marginalis (Osborn, 1902)

Lipeurus marginalis Osborn, 1902. Ohio Nat., 2: 176.

Lipeurus assessor minor Kellogg and Paine, 1910 (*nec* Piaget, 1880). Ent. News, 21: 460.

Trollipeurus eichleri Zlotorzycka, 1963. Ang. Parasit., 4: 5, figs. 3-6.

Type host: *Cathartes aura* (Linnaeus)--Turkey Vulture.

Head long, rounded in front, slightly narrowing apically, posterior margin slightly emarginate. There are 6 inflated incrassations along the border anterior to the antennae, 3 on each side. Pterothorax and abdominal segments with slender dark marginal lines. Legs with narrow black borders on the outer margin of femur and tibia. Described from 2 females collected at Ames, Iowa.

Specimens	Host	Locality	Date	Collector
7♀, 9♂	*Coragyps atratus*	Lincoln, Me.	VI-17-1938	W.J.Clayton

The above collection was made from *Coragyps atratus* (Bechstein)--Black Vulture, which is also a host for this species of mallophagan but a very rare bird in New England.

Measurements: *Falcolipeurus marginalis* (Osborn, 1902)

	5 ♂	5 ♀
Total Length	3.27 - 3.37 (3.33)	3.49 - 3.73 (3.58)

The number in parentheses is the mean.

Falcolipeurus suturalis (Rudow, 1869a)

Lipeurus quadripustulatus Denny, 1842 (*nec* Burmeister, 1838). Mon. Anopl. Brit.: 58 and 167, pl. 16.

Lipeurus suturalis Rudow, 1869a. Beitr. Kenntn. Malloph.: 44.

Lipeurus dennyi Giebel, 1874. Insecta Epizoa: 211. (*nn* for *L. quadripustulatus* Denny, 1842).

Lipeurus variopictus Giebel, 1874. Insecta Epizoa: 211 (*in part-tim*).

Type host: *Aquila chrysaëtos* (Linnaeus)--Golden Eagle.

I have no information concerning this species of Mallophaga.

FULICOFFULA

Fulicoffula Clay and Meinertzhagen, 1938. Entomologist, 71: 279.
Type species: *Esthiopterum luridum* (Nitzsch, 1818).

Stresemanniella Eichler, 1940. Zool. Anz., 130: 104.
Type species: *Lipeurus rotundatus* Piaget, 1888.

Sakoskida Carriker, 1953. Florida Ent., 36: 153.
Type species: *Lipeurus picturatus* Kellogg, 1896 (A synonym of *Lipeurus longiphilus* Kellogg, 1896).

Elongate Philopteridae. Head with large dorsal anterior plate bearing a median longitudinal slit and a striated anterior margin; clypeal suture distinct and continued inward across the dorsal surface of the head and down the median line as a narrow suture as far as the mandibles. Trabeculae small and similar in the 2 sexes; antennae sexually dimorphic; gular plate large. Abdomen narrow and elongate, with segment IX bilobed in the male and more deeply bilobed in the female, and partly flanked on each side by a pointed prolongation of segment VIII. Male genitalia with parameres always broadened and unthickened dorsally.

Fulicoffula americana Emerson, 1960b

Fulicoffula americana Emerson, 1960b. J. Kansas Ent. Soc., 33: 162, figs. 1-4.

Type host: *Porzana carolina* (Linnaeus)--Sora.

Head wider in male than in female. Temples rounded with a long seta at each posterolateral angle. Prothorax square with rounded angles; pterothorax longer than wide with 2 setae at each posterolateral angle. Abdomen elongate with segments VI-VIII short in the male; a pair of short setae on each tergite and sternite. Female genital plate with a fringe of fine hairs; male genitalia with a prominent mesosomal plate.

There are 2 species of *Fulicoffula* found on *Porzana carolina*, therefore, all records prior to the publication by Emerson (1960b) are subject to re-examination. He reports this species from New York, Oklahoma, Virginia and Kansas.

Fulicoffula comstocki (Kellogg and Chapman, 1902)

Lipeurus comstocki Kellogg and Chapman, 1902. J. N. Y. Ent. Soc., 10: 23, pl. 3, fig. 2.

Type host: *Rallus limicola* Vieillot--Virginia Rail.

Head elongate conical, front rounded, a short hair at the clypeal suture; sides of head diverging slightly with a short fine hair in front of the trabeculae; eye small with a fine bristle; temporal margins parallel; occipital margin concave. Prothorax almost square; pterothorax quadrangular, longer than wide, posterior margin with a narrow acute median angle on the abdomen. Abdomen long and narrow, segments gradually widening to the 4th, 5th and 6th segments; posterolateral angles with 1 or 2 long hairs.

This rare Mallophaga was described from 1 female collected in New York. Peters (1928) reports this species from Ohio.

Fulicoffula distincta Emerson, 1960b

Fulicoffula distincta Emerson, 1960b. J. Kansas Ent. Soc., 33: 162, figs. 5-7.

Type host: *Porzana carolina* (Linnaeus)--Sora.

This is an atypical species that Emerson (1960b) separated from all other species by the following characteristics: Narrow head in both sexes; short stout spines on the posterior margin of the female genital plate; short abdominal segments IV-V in the male; long, slender, simple parameres, and the absence of a prominent mesosomal plate in the male genitalia.

This species has been collected in Oklahoma, Idaho, Florida, Mississippi, and New York.

Fulicoffula longiphila (Kellogg, 1896)

Lipeurus longiphilus Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 119, pl. 7, fig. 7.

Lipeurus picturatus Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 121, pl. 8, figs. 1-2.

Type host: *Fulica americana* Gmelin--American Coot.

Head elongate, conical, with 4 marginal hairs in front of suture and 3 behind it. Antennae of male with 2nd segment largest, 3rd with a claw-like distal end; filiform, normal in female. Antennal bands broad, dark and straight; temporal margins bordered with black. Prothorax almost square; pterothorax quadrangular, longer than wide; anterior angles diagonally truncate; posterior margin straight, with 3 long setae and 1 shorter seta in each posterolateral angle. Abdomen elongate, 1st segment narrower than thorax at articulation, segments gradually widening to the 5th and narrowing to the 9th.

Measurements: *Fulicoffula longiphila* (Kellogg, 1896)
(from Kellogg, 1896)

	♂	♀
Head Length	.53	.55
Head Width	.35	.35
Width	.40	.50
Total Length	2.40	2.65

Specimens	Host	Locality	Date	Collector
1 slide	*Fulica americana*	Wenham Lake, Mass.	X-5-1923	W.S.Brooks (BMS Coll.)

GONIOCOTES

Goniocotes Burmeister, 1838. Handb. Ent., 2: 431.
Type species: *Ricinus gallinae* DeGeer, 1778 (By subsequent designation, Johnston and Harrison, 1911, Proc. Linn. Soc. N. S. W., 36: 326).
Dictyocotes Keler, 1939. Nova Acta Leop. Carol. (n. f.), 8: 153.
Type species: *Goniocotes haplogonus* Nitzsch, 1866.

The general characteristics of the genus *Goniocotes* are quite similar to those of the genus *Goniodes* Nitzsch, 1818, except that this genus is smaller in size and the antennae of the male are never appendiculated. The antennae of the males sometimes have the 1st and 2nd segments larger than the corresponding segments of the females. Meso- and metathorax fused into a pterothorax. Parameres of the male genitalia very elongate stylets. Members of this genus are ectoparasitic on birds of the order Galliformes.

Goniocotes chrysocephalus Giebel, 1874
Goniocotes chrysocephalus Giebel, 1874. Insecta Epizoa: 189.
Type host: *Phasianus colchicus* Linnaeus--Ring-necked Pheasant.

Emerson (1951) reports this species from Montana.

Specimens	Host	Locality	Date	Collector
1 slide	*Phasianus colchicus*	Mt. Carmel, Conn.	IV-18-1943	G.H.Plumb
1 slide	" "	W.Greenwich, RI	IV-15-1958	J.A.Mathewson

I have been unable to find a description of this species and with the existing figures it is impossible for me to distinguish this species from *Goniocotes gallinae* (DeGeer, 1778). Emerson (1951) states that he was unable to find many instances of lice infesting birds which were not considered the normal hosts. Therefore, these are quite likely *G. chrysocephalus*.

Goniocotes gallinae (DeGeer, 1778)

Ricinus gallinae DeGeer, 1778. Mem. Hist. Ins., 7: 79, pl. 4, fig. 15.

Philopterus hologaster Nitzsch, 1818. Germar's Mag. Ent., 3: 294 (*nn* for *R. gallinae* DeGeer, 1778).

Type host: Chicken.

This species has 2 long setae on the temporal lobes directed caudad; abdominal segments with very slender lateral bands which are widely separated medially; color pale yellow. This mallophagan is known as the "fluff louse".

I did not actively collect Mallophaga from domestic chickens during the course of this study but I have seen this species collected from a Ruffed Grouse, Pittsfield, N. H., March 2, 1964, A. H. Mason. The USNM also has several slides of this species collected from the same host.

GONIODES

Goniodes Nitzsch, 1818. Germar's Mag. Ent., 3: 293.

Type species: *Goniodes pavonis* (Linnaeus, 1758) (By subsequent designation, Johnston and Harrison, 1911. Proc. Linn. Soc. N. S. W., 36: 326).

Gonocephalus Keler, 1937. Arb. Morph. Tax. Ent. Berlin-Dahlem, 4: 130.

Type species: *Goniodes chelicornis* Denny, 1842 (A synonym of *Goniodes bituberculatus* Rudow, 1869).

Gonotyles Keler, 1939. Nova Acta Leop.-Carol. (n. f.), 8: 48.

Type species: *Goniodes cervinicornis* Giebel, 1874.

Oulocrepis Keler, 1939. Nova Acta Leop.-Carol. (n. f.), 8: 97.

Type species: *Goniodes dissimilis* Denny, 1842.

Solenodes Keler, 1939. Nova Acta Leop.-Carol. (n. f.), 8: 101.

Type species: *Goniodes dispar* Burmeister, 1838.

Astrocotes Keler, 1939. Nova Acta Leop.-Carol. (n. f.), 8: 109.

Type species: *Goniocotes asterocephalus* Burmeister, 1838.

Astrodes Keler, 1939. Nova Acta Leop.-Carol. (n. f.), 8: 113.

Type species: *Goniocotes coronatus* Giebel, 1874.

Homocerus Keler, 1939. Nova Acta Leop.-Carol. (n. f.), 8: 117.

Type species: *Goniocotes macrocephalus* Taschenberg, 1882.

Stenocrotaphus Keler, 1939. Nova Acta Leop.-Carol. (n. f.), 8: 124.

Type species: *Goniocotes gigas* Taschenberg, 1879.

Margaritenes Keler, 1939. Nova Acta Leop.-Carol. (n. f.), 8: 132.

Type species: *Goniodes eurygaster* Piaget, 1885.

Kelerigoniodes Conci, 1946. Boll. Soc. Ent. Ital., 76: 77.

Type species: *Goniodes processus* Kellogg and Paine, 1914.

Claygoniodes Conci, 1946. Boll. Soc. Ent. Ital., 76: 77.

Type species: *Goniodes extraneus* Clay, 1940 (A synonym of *Goniodes temporalis* (Keler, 1939).

Archigoniodes Conci, 1946. Boll. Soc. Ent. Ital., 76: 77.

Type species: *Goniodes wilsoni* Clay, 1938.

Head circumfasciate; clypeal margin flattened or broadly rounded with clypeal angles prominent. Head without ventral sclerotized spine-like processes. Clavi undeveloped, represented by membranous lobes. Temporal angle with lateroventral process bearing a small hair or spine in at least 1 sex, and usually in both. Occipital margin drawn out posteriorly to form an angle bearing a small hair or spine. Antennae may or may not be sexually dimorphic but in males segments IV-V are never modified or greatly reduced. Pterothorax without lateral indication of meso-metathoracic junction and always bearing ventrolaterally a fine hair arising from a pit in the integument. Hairs either present or absent on meso-metasternum; never present on metasternum alone. Abdomen with 1st segment large with free lateral margin. Abdominal segments I-VII with tergal plates widely separated and sternal thickenings in form of lateral, never median, plates. Pleurites broad with complex re-entrant heads. Abdominal segment VII with fine lateral hair arising from a pit in the integument. Abdomen of males consisting of 9 segments, 8th greatly reduced and appearing as a lateral rudiment on each side; genital opening dorsal and bearing long setae on the anterior and posterior margins. Abdomen of females consisting of apparently 8 segments, actually 10. Tergal plate VIII continuous across segment; vulva either terminal or at level of 7th segment and variable in form.

Goniodes bonasus Emerson, 1948

Goniodes bonasus Emerson, 1948. J. Kansas Ent. Soc., 21: 92, figs. 1-4.

Type host: *Bonasa umbellus* (Linnaeus)--Ruffed Grouse.

Female with clypeal margin broadly rounded. Temporal angle with lateroventral process bearing a seta and a short spine. Head wider than long. Prothorax 1/2 as wide as head, with nearly straight sides diverging from front to rear. Pterothorax triangular. Male antenna with 1st segment enlarged, without a process; 3rd produced distally at right angles to the 4th segment. Abdomen more rounded than in female; pleurites each with 3 or 4 long dorsal setae.

Emerson (1948) reported this species from Montana. Emerson (1951) reported it from New York, Montana and Colorado.

Goniodes colchici Denny, 1942

Goniodes colchici Denny, 1942. Mon. Anopl. Brit.: 56 and 158, pl. 12, fig. 4.

Goniodes colchicus Giebel, 1874. Insecta Epizoa: 200.

Type host: *Phasianus colchicus* Linnaeus--Ring-necked Pheasant.

This species has no meso-metasternal setae. The sternal plates on abdominal segments undivided; dorsal chaetotaxy of the 1st abdominal segment, 2-8-2. Female with 12 to 15 setae in a concentration at each posterolateral angle of the vulva.

Geist (1931) has reported this species from Ohio and Emerson (1951) from California, Iowa, Montana, Oregon, British Columbia, and Ontario.

Goniodes dissimilis Denny, 1842

Goniodes dissimilis Denny, 1842. Mon. Anopl. Brit.: 57 and 162, pl. 12, fig. 6.

Goniodes dissimilis bankiva Piaget, 1880. Les Pediculines: 269.

Type host: Chicken.

This is the "brown chicken louse" common throughout the United States. It will be discussed together with the following species, *G. gigas* (Taschenberg, 1879) which is also a parasite of the chicken.

Goniodes gigas (Taschenberg, 1879)

Goniocotes hologaster Denny, 1842 (*nec* Nitzsch, 1818). Mon. Anopl. Brit.: 56 and 153, pl. 13, fig. 4.

Goniocotes gigas Taschenberg, 1879. Z. ges. NatWiss., 52: 104, pl. 1, fig. 10.

Goniocotes abdominalis Piaget, 1880. Les Pediculines: 238, pl. 20, fig. 9.

Type host: Guinea Fowl.

New England host:
Chicken.

G. gigas is known as the "large chicken louse" and is common on the domestic chicken. *G. dissimilis* and *G. gigas* may be distinguished by the following key:

Antennae similar in the 2 sexes. Three long setae on each temple----------*G. gigas*

Antennae sexually dimorphic. Two long setae on each temple----------*G. dissimilis*

No attempt was made to collect Mallophaga from the chicken during the course of this study.

INCIDIFRONS

Incidifrons Ewing, 1929. Manual External Parasites: 111 and 189.

Type species: *Philopterus pertusus* Burmeister, 1838 (A synonym of *Pediculus fulicae* Linnaeus, 1758).

Head large, with conspicuous rounded temples and prominent forehead with slightly concave sides. Anterior margin of head deeply incised or notched, the notch being flanked by converging, hyaline flaps. Dorsal anterior plate conspicuous, undivided. Trabeculae large. Antennae short and similar in the 2 sexes. Pterothorax broader than long, sides divergent, posterior margin either outwardly rounded or angulate. Abdomen stout, with 9 segments, the last being very small; abdominal spiracles conspicuous, 6 pairs. Members of the genus *Incidifrons* are ectoparasitic on birds of the order Gruiformes.

Incidifrons monachus (Kellogg and Paine, 1911)

Docophorus pertusus monachus Kellogg and Paine, 1911, Ent. News, 22: 75, fig. 1.

Type host: *Rallus limicola* Vieillott-Virginia Rail.

Head with 8 hairs on each side of the clypeus. Clypeus extending from the trabeculae to the expansion of the pincer-like preantennal region. Dorsal surface of 1st abdominal segment sinuous and projected caudad medially and at each posterolateral angle; 16 setae on the posterior margin of segment V, with the number diminishing anteriorly and posteriorly. This species was described from 1 male collected at Monterey, California, and appears to be only published record of the species in North America.

Incidifrons transpositus (Kellogg, 1896)

Docophorus transpositus Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 478, pl. 65, fig. 6.

Type host: *Fulica americana* Gmelin--American Coot.

Head with closed forcep-points; trabeculae reaching beyond segment 1 of the antennae; temporal margins with 2 long setae and a short one between them; temporal region dark brown with a narrow black border; a narrow black occipital border. Prothorax with rounded sides and angles. Abdomen obovate; segments III-VI with 2 or 3 short hairs.

Kellogg (1896) described this species from a single female collected in Kansas. Peters (1928) reports it from Ohio, Peters (1936) reports it from Illinois, North Carolina, and South Carolina, Brimley (1938) records it from North Carolina, and Whitehead (1954) from Quebec.

Measurements: *Incidifrons transpositus* (from Kellogg, 1896)

	♀
Head Length	.56
Head Width	.59
Abdomen Width	.90
Total Length	2.00

LAGOPOECUS

Lagopoecus Waterston, 1922. Ent. Mon. Mag., 58: 159.

Type species: *Nirmus cameratus* Burmeister, 1838.

Head longer than wide, rounded in front. Eyes prominent, each with a long seta. Antennae filiform and similar in the 2 sexes. Temples convexly rounded, each with 2 long setae; cephalic margin without setae. Prothorax short, wide, with 1 long seta at each posterolateral angle. Pterothorax short, wide, with posterior setae. Abdomen short and wide. Tergal plates with median setae; long setae in

the posterolateral angles; and post spiracular setae. Sternal plates with a pair of median setae. Members of this genus are parasitic on birds of the order Galliformes.

Lagopoecus colchicus Emerson, 1949

Lagopoecus colchicus Emerson, 1949. J. Kansas Ent. Soc., 22: 78, fig. 6.

Degeeriella brionica Vrazic, 1956. Vet. Arhiv. Zagreb, 26: 124, 128, and 131.

Type host: *Phasianus colchicus* Linnaeus--Ring-necked Pheasant.

Clypeal margin evenly rounded, with scattered small setae. Eyes prominent, each with 1 long seta. Temples rounded, each with 2 long setae and 3 short setae. Cephalic margin without setae. Prothorax short, narrow, with 1 long seta on each posterolateral angle. Pterothorax twice as wide as long. Abdominal tergal plates with 8 median setae and 1 post-spiracular seta on each posterolateral angle. Pleural plates of segments III-IV, each with 1 long seta; segments V-VIII, each with 2 long setae. Sternal plates with 2 median setae.

Emerson (1950) records this species from Utah, Michigan, Illinois, and Montana.

Specimens	Host	Locality	Date	Collector
1 slide	*Phasianus colchicus*	Mt.Carmel, Conn.	IV-18-1942	G.H.Plumb
1 slide	" "	Massachusetts	IV-26-1926	Peters (MCZ Coll.)

Lagopoecus sinensis (Sugimoto, 1930)

Degeeriella sinensis Sugimoto, 1930. J. Soc. Trop. Agric. Taiwan, 2: 130, pl. 3-4.

Type host: Chicken.

I have no information concerning this species of *Lagopoecus*.

Lagopoecus umbellus Emerson, 1950

Lagopoecus umbellus Emerson, 1950. J. Kansas Ent. Soc., 23: 101, pl. 1, fig. 8, and pl. 2, fig. 6.

Type host: *Bonasa umbellus* (Linnaeus)--Ruffed Grouse.

Head with clypeal margin evenly rounded and with small scattered setae. Eyes prominent, each with a long seta. Temples convexly rounded, each with 2 long setae; caudal margin without setae. Prothorax short, wide, with 1 long seta at each posterolateral angle. Pterothorax more than twice as wide as long, with 8 long setae in groups of 2 each arranged along the posterior margin. Abdomen with 1 pair of sternal setae on each abdominal segment. Vulva of female with posterior marginal row of short setae.

Peters (1936) reports this species from New York and Pennsylvania, Brimley (1938) from North Carolina, and Emerson (1950) from Idaho, Pennsylvania, New York and Ontario.

Specimens	Host	Locality	Date	Collector
23 ♀, 5 ♂	*Bonasa umbellus*	Bar Harbor, Me.	VII-23-1936	A.E.B.

LIPEURUS

Lipeurus Nitzsch, 1818. Germar's Mag. Ent., 3: 292.
Type species: *Pediculus caponis* Linnaeus, 1758 (By subsequent designation, International Commission on Zoological Nomenclature).

Long and slender Philopteridae. Head rounded in front, that of male usually with a post-antennal constriction, width at temples usually less than width at widest part of preantennal region. Females differ in having no post-antennal constriction and in having the width at the temples equal to, or greater than, the preantennal width. Trabeculae of female shorter than in male and triangular in outline; those of male narrow, curved on the anterior margin. Antennae of male with 1st segment enlarged and extended, bearing a short appendage. Third segment with distal angle projected. Antennae of female filiform. Preantennal region without suture or modification of the integument. Prothorax without lateral setae or spines; meso-metathoracic junction usually visible on the lateral margin of the pterothorax. Abdomen elongate, pleurites without complex re-entrant heads and similar in both sexes. Tergal plates of male transversely continuous; setae few; female with thickening in the form of tergal plates on abdominal segments II-VI, usually more pronounced toward the center, forming a central hour-glass pattern, not always apparent.

Lipeurus caponis (Linnaeus, 1758)
Pediculus caponis Linnaeus, 1758. Syst. Nat., ed. 10: 614.
Lipeurus variabilis Burmeister, 1838. Handb. Ent., 2: 434.
Nirmus tessellatus Denny, 1842. Mon. Anopl. Brit.: 49 and 121, pl. 7, fig. 2.
Lipeurus antennatus Piaget, 1885 (*nec* Giebel, 1874). Les Pediculines, Supplement: 75, pl. 8, fig. 3.
Lipeurus variabilis alpha Kellogg, 1908. *In Wytsman's* Gen. Ins., 66, Mallophaga: 45.
Lipeurus variabilis beta Kellogg, 1908. *In Wytsman's* Gen. Ins., 66, Mallophaga: 45.
Lipeurus variabilis gamma Kellogg, 1908. *In Wytsman's* Gen. Ins., 66, Mallophaga: 45.
Lipeurus lineatus McGregor, 1917a (*nec* Giebel, 1874). Psyche, 24: 114, pl. 7, figs. 2 and 5.
Lipeurus dovei McGregor, 1918. Psyche, 25: 46 (*nn* for *L. lineatus* McGregor, 1917a, *nec* Giebel, 1874).
Lipeurus formosanus Sugimoto, 1929 (*nec* Uchida, 1917). Rept. Dept. Agri. Res. Inst. Formosa, 43: 53.
Lipeurus caponis borcherti Eichler, 1953a. Mh. Vet. Med., 8: 566, fig.
Lipeurus bakeri Carriker, 1956. Florida Ent., 39: 128, fig. 76.
Type host: Chicken.

Body long and slender; abdomen with comparatively few scattered setae on the dorsum, these setae not confined to form a wide median stripe, front of head evenly rounded. In the male, post-antennal constriction present; greatest width of head in the preantennal region.

This mallophagan has a world-wide distribution on the domestic chicken. It is known as the "wing louse" and is the only species commonly found on the primary and secondary wing feathers.

Lipeurus maculosus Clay, 1938

Lipeurus maculosus Clay, 1938. Proc. Zool. Soc. London, (B), 108: 116, figs. 5a, 6a, and pl. 1, fig. e.

Type host: *Phasianus colchicus* Linnaeus--Ring-necked Pheasant.

I do not have a description of this species of Lipeurus. The genus *Lipeurus* does not naturally occur on New World Galliformes and a great many of the Ring-necked Pheasants in New England are raised in state game farms and released reducing the chances for infestation by Mallophaga.

Emerson (1951) has reported this species from Connecticut, New Jersey, Oregon, Wisconsin, and British Columbia.

LUNACEPS

Lunaceps Clay and Meinertzhagen, 1939. Ann. Mag. Nat. Hist., (11), 4: 450.

Type species: *Degeeriella actophila* (Kellogg and Chapman, 1899).

Head with narrow hyaline margin arising from the clypeal suture; internal and clypeal bands broadly fused anteriorly for about 1/3 of their length; dorsal anterior plate small and irregular in shape and may be joined to fused part of clypeal and internal bands. Dorsal antennal bands pass inwards on each side to form a transverse suture across head. Dorsal occipital band and transverse antennal band absent. Pterothorax with lateral margins divergent. Abdomen with segment I small; paratergal plates simple without inwardly directed process and only rarely with elongated re-entrant heads. Tergal plates transversely continuous and rarely with partial median division.

Lunaceps holophaeus (Burmeister, 1838)

Nirmus holophaeus Burmeister, 1838. Handb. Ent., 2: 427.

Nirmus bicolor Piaget, 1880. Les Pediculines: 175, pl. 14, fig. 9.

Type host: *Philomachus pugnax* (Linnaeus)--Ruff.

New England hosts:

Calidris canutus (Linnaeus)--Knot.

Erolia maratima (Brunnich)--Purple Sandpiper.

Crocethia alba (Pallas)--Sanderling.

Ereunetes pusillus (Linnaeus)--Semipalmated Sandpiper.

Subspecies of *Lunaceps holophaeus* have been erected by Timmermann (1954b) to cover the forms found on small waders. The *Lunaceps* complex is difficult to characterize at species level because they show such little plasticity of shape. Even the male genitalia, an important taxonomic character in most other genera, are of the same type throughout the entire genus.

Specimens	Host	Locality	Date	Collector
11 ♀, 6 ♂	*Calidris canutus*	Phippsburg, Me.	IX-1-1965	H.Tyler
1 ♀, 2 ♂	*Ereunetes pusillus*	Hampton, NH	X-10-1964	J.E.K.
7 ♀, 3 ♂	" "	Madbury, NH	XI-22-1964	J.E.K.
1 slide	*Crocethia alba*	Marshfield,Mass.	IX-27-1928	BMS
2 ♀, 4 ♂, 3 imm.	" "	Charlestown,RI	VIII-27-1961	L.Terbush

Measurements: *L. holophaeus* (Burmeister, 1838), Ex. *Calidris canutus*

Total Length of 6♂:

1.45, 1.41, 1.50, 1.50, 1.44, 1.48

Total Length of 6♀:

1.57, 1.56, 1.71, 1.59, 1.45, 1.72

Measurements: *L. holophaeus*, Ex. *Ereunetes pusillus*

Total Length of 4♂:

1.59, 1.60, 1.59, 1.65

Total Length of 4♀:

1.74, 1.83, 1.84, 1.77

One of the males, ex. *Crocethia alba*, had a total length of 1.51 mm.

Lunaceps limosella paschalis Timmermann, 1954b

Lunaceps paschalis Timmermann, 1954b. Ann. Mag. Nat. Hist., (12), 7: 630, fig. 4c.

Type host: *Limosa haemastica* (Linnaeus)--Hudsonian Godwit.

Timmermann (1954b) erected the species group *Limosa* for those *Lunaceps* found on various godwits. He stated that, "A definite judgement of the validity and limitation of this species can hardly be obtained before a greater number of specimens from *L. lapponica* and all nearer related populations have been subjected to a mathematical test of their variability."

L. limosella paschalis is a small member of the *Limosa* group with a much shorter head and a clypeus without a dorsal preantennal suture.

Measurements: *L. limosella paschalis* Timmermann, 1954b
(from Timmermann, 1954b)

	♂	♀
Head Length	.39 - .40	.36 - .40
Head Width	.29 - .32	.29 - .32
Abdomen Width	.36 - .47	.41 - .47
Total Length	1.55 - 1.56	1.39 - 1.60

Specimens	Host	Locality	Date	Collector
1♀, 2♂	*Limosa haemastica*	Plum Island, Mass.	X-31-1964	U.S.Dept.of Interior

The female was infested with a *Laboubeniales* fungus on the abdomen.

Measurements: *L. limosella paschalis*

	2 ♂		1 ♀
Head Length	.39	.39	.39
Head Width	.30	.28	.30
Abdomen Width	.43	.43	.48
Total Length	1.54	1.53	1.53

Lunaceps numenii phaeopi (Denny, 1842)
Nirmus phaeopi Denny, 1842. Mon. Anopl. Brit.: 54 and 144, pl. 10, fig. 7.
Nirmus phaeopodis Giebel, 1874. Insecta Epizoa: 166.
Nirmus trimaculatus Piaget, 1880. Les Pediculines: 174, pl. 14, fig. 8.
Degeeriella oliveri Johnston and Harrison, 1912. Trans. N. Z. Inst., 44: 367, fig. 3.
Type host: *Numenius phaeopus* (Linnaeus)--Whimbrel.

Timmermann (1954b) places this species in the *Numenius* group, and the *numenii-phaeopi* subgroup of the *Lunaceps* complex, which is characterized by parameres being equally curved (sabre-shaped).

Specimens	Host	Locality	Date	Collector
11♀, 10♂	*Numenins phaeopus*	Phippsburg, Me.	IX-9-1965	H.Tyler

Measurements: *Lunaceps numenii phaeopi* (Denny, 1842)

	8 ♂		8 ♀	
	Range	Average	Range	Average
Total Length	1.71 - 1.90	(1.81)	1.86 - 2.07	(1.98)

Lunaceps sp.

Two males and 1 immature from *Erolia melanotes* (Vieillot)--Pectoral Sandpiper, Brunswick, Maine, September 13, 1965, H. Tyler collector. One male and 2 females from *Erolia alpina* (Linnaeus)--Dunlin, Hampton, New Hampshire, October 10, 1964, J. E. K. collector. Both of these are at most subspecies of *Lunaceps holophaeus*.

MULCTICOLA

Mulcticola Clay and Meinertzhagen, 1938. Entomologist, 71: 279.
Type species: *Esthiopterum hypoleucum* (Denny, 1842).

Head with rounded or flattened hyaline anterior margin; clypeal suture distinct and prolonged inward, dorsally on each side, to form a narrow and irregular suture, which is continued backwards along the median line of the head to a point just behind the posterior margin of the clypeal signature; trabeculae small; antennae filiform and similar in the 2 sexes. Thorax with lateral margins of both pro- and pterothorax flattened and diverging distally to a slight extent. Abdomen elongated, with segment I short and with 9 segments in both sexes. Pleurites distinct, with elongated pointed re-entrant heads. Genitalia with short basal plate; parameres prolonged, pointed and somewhat curved distally; endomeres straight, pointed terminally and shorter than parameres; telomeres small but distinct.

Mulcticola macrocephalus (Kellogg, 1896)
Lipeurus macrocephalus Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 504, pl. 68, fig. 3.
Nirmus tyrannus Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 228.
Type host: *Chordeiles minor* (Forster)--Common Nighthawk.

Described by Kellogg from many specimens collected in California. This species has also been reported by Peters (1936) from Maine, New Hampshire and South Carolina. *Mulcticola macrocephalus* (Kellogg, 1896) is the only known species of the genus found in North America. The genus description is sufficient to determine this species.

ORNITHOBIUS

Ornithobius Denny, 1842. Mon. Anopl. Brit.: 183.
Type species: *Ornithobius cygni* (Linnaeus, 1758) (By subsequent designation, Johnston and Harrison, 1911, Proc. Linn. Soc. N. S. W., 36: 326).
Metopeuron Rudow, 1870. Z. ges. NatWiss., 36: 139.
Type species: *Metopeuron punctatum* Rudow, 1870 (By subsequent designation, Harrison, 1916, Parasitology, 9: 22).
Ornithonomus Neumann, 1909. Parasites et maladies parasitaires des oiseaux domestiques: 9 (*nn* for *Ornithobius* Denny, 1842).

Head broad, quadrangular, about as wide as long. Clypeus with frontal emargination expanded within, so that the bounding sides are pincer-like in shape, the points almost touching, thus nearly enclosing the emargination. Antennae arise far in front of the middle of the head and are sexually dimorphic. Antennae of male with 1st 2 segments larger than the others; 3rd segment diagonally truncate and expanded with or without an appendage. Abdomen narrow, elongate, with 2 parallel lateral bands on each side. Posterior abdominal segment in male pointed, that of female, rounded or truncate. Members of this genus are parasitic on birds of the subfamilies Cygninae and Anserinae.

Ornithobius goniopleurus Denny, 1842

Ornithobius goniopleurus Denny, 1842. Mon. Anopl. Brit.: 60 and 184, pl. 23, fig. 2.

Ornithobius atromarginatus Denny, 1842. Mon. Anopl. Brit.: 60 and 185, pl. 23, fig. 3.

Type host: *Branta canadensis* (Linnaeus)--Canada Goose.

This is the only species of the genus *Ornithobius* to be found in New England and easily recognizable by the presence of a forcipate clypeal margin. *O. goniopleurus* is a common parasite of the Canada Goose. Wilson (1928) reports it from New York, Peters (1928) from Ohio, Peters (1936) Georgia and New Hampshire, Brimley (1938) North Carolina, and Spencer (1947) from British Columbia.

Specimens	Host	Locality	Date	Collector
1 ♀	*Branta canadensis*	Bar Harbor, Me.	V-10-1938	A.E.B.
4 ♀, 1 ♂	" "	Vassalboro, Me.	X-30-1959	R.Nash
5 ♀, 1 ♂	" "	Plum Island,Mass.	X-16-1965	D.Penny,Jr.
4 ♀, 1 ♂	" "	" " "	X-30-1965	L.Noyes
6 ♀, 6 ♂	" "	Exeter, NH	X-16-1964	D.Gallup
1 ♀, 2 ♂	" "	Newmarket, NH	X-26-1964	D.Gallup
1 slide	" "	Rye, NH	X-24-1932	L.R.Nelson (USNM)

Measurements: *Ornithobius goniopleurus* Denny, 1842.

	♂			♀		
Head Length	.97	.82	1.02	.82	.84	.67
Head Width	.91	.73	.85	.81	.78	.64
Prothorax Width	.52	.42	.51	.43	.46	.40
Pterothorax Width	.97	.75	.93	.81	.76	.63
Abdomen Length	3.30	2.49	2.85	2.28	2.14	1.51
Abdomen Width	1.27	.99	1.17	1.09	1.08	.61
Total Length	5.37	4.02	4.77	3.93	3.75	2.88

Oxylipeurus Mjöberg, 1910. Ark. Zool., 6: 91.
Type species: *Lipeurus inaequalis* Piaget, 1880.
Eiconolipeurus Carriker, 1945. Rev. Brasil. Biol., 5: 91.
Type species: *Eiconolipeurus importunus* Carriker, 1945.
Epicolinus Carriker, 1945. Rev. Brasil. Biol., 5: 104.
Type species: *Lipeurus clavatus* McGregor, 1917.

Head circumfasciate, that of the female generally broader than that of male. Chitin of the anterior portion of the head modified either into a number of projections or into a raised transverse line across head. Transverse line across head. Transverse clypeal suture present and a curved, indefinite post-antennal suture passes posteriorly from each antennal fossa. Trabeculae variable in size and shape and may be present or absent in female. Antennae sexually dimorphic; 1st segment of male enlarged and bearing, in some species, a broad membranous appendage not always apparent, 3rd segment produced beyond the point of articulation with 4th. Occipital bands absent in all but 1 known species. Prothorax with lateral seta or spine; lateral indication of meso- metathoracic junction rarely marked. Abdomen with characteristic internal curved strut in known North American species; pleurites with re-entrant heads. Male genitalia variable in form with flattened endomeral plate, free penis and no preputial sac.

Oxylipeurus mesopelios colchicus Clay, 1938
Oxylipeurus mesopelios colchicus Clay, 1938. Proc. Zool. Soc. London, (B), 108: 177, pl. 11, fig. 3.
Lipeurus ponnonicus Vrazic, 1956. Vet. Arhiv. Zagreb, 26: 123, 127, and 130.
Type host: *Phasianus colchicus* Linnaeus--Ring-necked Pheasant.

Head longer than wide; trabeculae small, transparent; antennae exhibiting sexual dimorphism, 3rd segment of male with an appendage; forehead rounded in front with 2 long setae. Prothorax square bearing 2 medium length setae on the dorsal posterior margin. Pterothorax about as wide as head with 2 closely grouped series of 4 long setae on the dorsal posterior margin. Abdomen long bearing 2 tergo-central setae on each segment.

At the present time, this is the only species of the genus found on wild New England birds.

Specimens	Host	Locality	Date	Collector
2 ♀	*Phasanius colchicus*	Mt. Carmel, Conn.	IV-18-1943	G.H.Plumb

Measurements: *Oxylipeurus mesopelios colchicus* Clay, 1938.

	2 ♀	
Head Length	.61	.60
Head Width	.45	.43
Prothorax Width	.31	.31
Pterothorax Width	.45	.46
Abdomen Length	1.30	1.42
Abdomen Width	.55	.63
Total Length	2.37	2.50

PECTINOPYGUS

Pectinopygus Mjöberg, 1910. Ark. Zool., 6: 95.
Type species: *Lipeurus pullatus* Nitzsch, 1866 (A synonym of *Pectinopygus bassani* (O. Fabricius, 1780).
Micronaubates Pessoa and Guimaraes, 1935. Rev. Brasil. Biol. Hyg. S. Paulo, 6: 109.
Type species: *Naubates* (*Micronaubates*) *garbei* Pessoa and Guimaraes, 1935.
Epipelecanus Harrison, 1935. *In Thompson*, Ann. Mag. Nat. Hist., (10), 16: 149.
Type species: *Lipeurus forficulatus* Nitzsch, 1866.
Epifregata Harrison, 1935. *In Thompson*, Ann. Mag. Nat. Hist., (10), 16: 150.
Type species: *Lipeurus gracilicornis* Piaget, 1880.
Philichthyophaga Harrison, 1935. *In Thompson*, Ann. Mag. Nat. Hist., (10), 16: 150.
Type species: *Lipeurus brevicornis* Denny, 1842.

Head slightly longer than broad, conical, with sides of preantennal region straight or slightly convex, dorsal anterior plate distinct, somewhat hexagonal and longer than wide. Trabeculae small, reaching the middle of the 1st antennal segment; antennae alike in both sexes or, in some species sexually dimorphic. Temporal lobes rounded, and wider than head at the insertion of the antennae. Prothorax about twice as wide as long, sides slightly divergent, with dorsal setae of varying lengths at each posterolateral angle; pterothorax trapezoidal with sides slightly divergent. Thoracic sternal plate well developed. Legs long. Abdomen elongate with pleural and sternal plates distinct. Terminal abdominal segment of female bilobed; vulva with dense fringe of setae. Male genitalia distinctive, the parameres smooth and slender with free or fused distal ends. Members of this genus are parasitic on birds of the order Pelecaniformes.

Pectinopygus bassani bassani (O. Fabricius, 1780)

Pediculus bassani O. Fabricius, 1780. Fauna Groenlandica: 218.

Docophorus bassanae Denny, 1842. Mon. Anopl. Brit.: 48 and 110, pl. 6, fig. 3.

Lipeurus staphylionoides Denny, 1842. Mon. Anopl. Brit.: 59 and 180, pl. 15, fig. 2.

Lipeurus pullatus Nitzsch, 1866. *In Giebel*, Z. ges. NatWiss, 28: 387.

Type host: *Morus bassanus* (Linnaeus)--Gannet.

Head slightly longer than wide. Dorsal anterior plate square, well defined, with 2 small posterolateral posteriorly directed projections. Clypeal region about 1/4 of the length of the head. Antennae sexually dimorphic, 1st segment of male enlarged, 3rd segment with distal projection. Prothorax more than twice as broad as long; a small spear-shaped sternite present with 2 small hairs on the posterior margin on either side of the mid-line. Pterothorax slightly narrower than head at its greatest width. Abdomen stout. Slightly less than twice as long as wide.

Measurements: *Pectinopygus bassani bassani* (from Thompson, 1940)

	♂	♀
Total Length	3.2	2.7
Greatest Width	.77	.8

Specimens	Host	Locality	Date	Collector
1 slide	*Morus bassanus*	Wells River, Vt.	XI-6-1938	W.F.Smith

Pectinopygus farallonii (Kellogg, 1896)

Nirmus farallonii Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 103, pl. 5, fig. 4.

Type host: *Phalacrocorax auritus* (Lesson)--Double-crested Cormorant.

Head conical, narrow in front; trabeculae small; temporal margins rounded; occipital margin slightly concave; antennae sexually dimorphic; those of the female short, filiform, with segment 2 the longest, segments of male antennae in the following order of length; 1, 2, 3, 5, 4; segment 1 very long and curving anteriorly giving the 2 antennae the appearance of a set or horns. Dorsal anterior plate shield-shaped. Prothorax wider than long, with rounded angles. Pterothorax with lateral margins diverging slightly, posterior margin straight. Abdomen elongate, with posterior angles projecting, with 2 or 3 rather long hairs in each angle.

Kellogg (1896) described this species from a single female collected in California. Peters (1928) records it from Ohio, Peters (1936) Georgia, Illinois and New Hampshire, Procter (1938) Maine, Brimley (1938) North Carolina, Emerson (1940) Oklahoma, and Whitehead (1954) Quebec.

Specimens	Host		Locality	Date	Collector
2 ♀, 1 ♂	*Phalacrocorax auritus*		Muscongus Bay,Me.	VII-19-1963	A.C.Borror
8 ♀, 7 ♂	"	"	Durham, NH	VIII-30-1965	J.E.K.
1 ♀, 2 ♂	"	"	Newington, NH	VIII-30-1965	J.E.K.
4 ♀, 9 ♂	"	"	Greenland, NH	IX-2-1965	J.E.K.

Measurements: *Pectinopygus farallonii* (Kellogg, 1896)

	♂		♀	
Head Length	.63	.64	.61	.61
Head Width	.58	.58	.57	.57
Prothorax Width	.43	.45	.43	.43
Pterothorax Width	.57	.60	.58	.60
Abdomen Length	1.87	1.92	1.65	1.69
Abdomen Width	.75	.73	.82	.96
Total Length	3.06	3.09	2.68	2.75

Pectinopygus gyricornis (Denny, 1842)
Lipeurus gyricornis Denny, 1842. Mon. Anopl. Brit.: 58 and 167, pl. 15, fig. 1.
Lipeurus toxoceros Nitzsch, 1866. *In Giebel*, Z. ges. NatWiss., 28: 386.
Lipeurus longicornis Piaget, 1880. Les Pediculines: 334, pl. 27, fig. 3.
Type host: *Phalacrocorax carbo* (Linnaeus)--Great Cormorant.

Head longer than wide; clypeal region short; dorsal anterior plate oblong in shape; trabeculae small; antennae sexually dimorphic, those of female short, filiform; antennae of male with very long 1st segment. Prothorax 2 1/2 times as wide as long with 2 long setae either side of the median line on the ventral surface. Pterothorax slightly narrower than the head; lateral margins heavily sclerotized and pigmented; posterior margin almost straight. Abdomen elongate.

Measurements: *Pectinopygus gyricornis* (Denny, 1842) (from Thompson, 1946)

	♂	♀
Greatest Width	.56	.77
Total Length	2.66	2.45

PENENIRMUS

Penenirmus Clay and Meinertzhagen, 1938. Entomologist, 71: 73.
Type species: *Pediculus albiventris* Scopoli, 1763.
Picophilopterus Ansari, 1947. Proc. Nat. Inst. Sci. India, 13: 265.
Type species: *Picophilopterus tuktola* Ansari, 1947.

Head with lateral clypeal margins converging sharply towards the clypeal suture and then converging gradually towards the anterior

hyaline margin of head. Dorsal anterior plate pointed posteriorly. Trabeculae narrow and pointed in both sexes; antennae filiform and similar in both sexes. Temples rounded but never swollen beyond the extension of the line of the lateral clypeal margin. Ventral occipital bands present, but no dorsal occipital bands as in the genus *Philopterus*. Occiput with a curved suture originating from the antennal fossa. Prothorax rectangular; pterothorax narrow and pointed posteriorly. Abdomen elongate and hairy, with terminal segment of the male rounded posteriorly, terminal segment of female bilobed. Pleurites distinct with re-entrant heads; tergal plates either narrowly separated medially or continuous, or joined by a narrow posterior chitinous strip. Male genitalia with parameres curved and not protruding beyond the mesosome; the latter consisting of a flattened plate with central penis.

Penenirmus albiventris (Scopoli, 1763)

Pediculus albiventris Scopoli, 1763. Ent. Carniolica: 385.
Pediculus motacillae J. C. Fabricius, 1776. Gen. Ins.: 310 (*nn* for *P. albiventris* Scopoli, 1763).
Docophorus troglodytis Waterston, 1915. Zool. Jb., Abt. Syst., 39: 27, figs. c-f.
Penenirmus longuliceps (Blagoveshtchensky, 1940). Mag. Parasit., Leningr., 8: 65 and 88, fig. 19.
Type host: *Troglodytes troglodytes* (Linnaeus)--Winter Wren.

I have no data on this species and have been unable to find any records of its collection in the United States.

Measurements: *Penenirmus albiventris* (Scopoli, 1763)
(from Clay and Hopkins, 1951)

	♂	♀
Head Length	.42	.48
Head Width	.37	.45
Prothorax Width	.20	.25
Pterothorax Width	.33	.40
Abdomen Length	.73	1.13
Abdomen Width	.45	.63
Total Length	1.33	1.85

Penenirmus auritus (Scopoli, 1763)

Pediculus auritus Scopoli, 1763. Ent. Carniolica: 383.
Docophorus superciliosus Burmeister, 1838. Handb. Ent., 2: 427.
Docophorus evagans Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 480, pl. 66, fig. 2.
Docophorus californiensis Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 483, pl. 66, fig. 6.
Penenirmus varius Emerson, 1953. J. Kansas Ent. Soc., 26: 134, pl. 2, figs. 6 and 8.
Penenirmus auritus aurifrons Carriker, 1956. Florida Ent., 39: figs. 34-35.
Penenirmus serrilimbus pileatus Emerson and Johnson, 1961. J. Kansas Ent. Soc., 34: 40, figs. 11, 18 and 30.
Penenirmus serrilimbus asyndesmus Emerson and Johnson, 1961. J. Kansas Ent. Soc., 34: 40, figs 12, 21 and 31.

Penenirmus villosus Emerson and Johnson, 1961. J. Kansas Ent. Soc., 34: 41, figs. 13, 15 and 32.
Type host: *Dendrocopus major* (Linnaeus)
New England hosts:
Dryocopus pileatus (Linnaeus)--Pileated Woodpecker.
Sphyrapicus varius (Linnaeus)--Yellow-bellied Sapsucker.
Dendrocopos villosus (Linnaeus)--Hairy Woodpecker.
Dendrocopos pubescens (Linnaeus)--Downy Woodpecker.

Penenirmus auritus is found on all North American Piciformes excluding *Colaptes* spp. The marginal temporal setae 2 and 4 elongate. Pterothorax and tergites III-V with an average of 4 centro-posterior setae (Dalgleish, 1965).

Peters (1928) reports this species on the Yellow-bellied Sapsucker from Ohio. Peters (1936) records *P. auritus* on the Downy Woodpecker from Ohio and Virginia and on the Yellow-bellied Sapsucker from Florida, Maryland, South Carolina, and Vermont. Emerson and Johnson (1961) record it from the Downy Woodpecker in Virginia, Oklahoma, and Indiana; from the Yellow-bellied Sapsucker in Arizona, Indiana, Virginia, Alaska, and California; from the Pileated Woodpecker in Oregon, Washington, and Arkansas; and from the Hairy Woodpecker in New York, Mississippi, Oregon, Montana, and California.

Specimens	Host	Locality	Date	Collector
13♀, 9♂	*Sphyrapicus varius*	Sandwich, NH	V-6-1964	J.E.K.
2♀, 1♂, 9 imm.	*Dendrocopos pubescens*	Augusta, Me.	III-7-19--	A.E.B.

Measurements: *P. auritus* from *Sphyrapicus varius*

	♂	♀
Head Length	.48	.52
Head Width	.45	.46
Prothorax Width	.27	.28
Pterothorax Width	.46	.48
Abdomen Length	.93	1.12
Abdomen Width	.55	.63
Total Length	1.74	1.99

Penenirmus gulosus (Nitzsch, 1866)
Nirmus gulosus Nitzsch, 1866. Z. ges. NatWiss., 27: 117.
Nirmus trimarginis Carriker, 1902. J. N. Y. Ent. Soc., 10: 222, pl. 20, fig. 2, and pl. 21, fig. 5.
Type host: *Certhia familiaris* Linnaeus--Brown Creeper.

Carriker (1902) reported this species from Nebraska and this is the only record from the United States.

Head triangular with the preantennal region narrowly truncate; trabeculae slender, bluntly pointed, as long as the 1st antennal segment; eye with a long seta; temples rounded with 2 long setae and

several short bristles; occipital margin concave. Prothorax short, quadrangular, with lateral margins diverging slightly; posterior angles rounded, each with a long seta. Pterothorax with sides widely diverging; posterior margin angulated with several setae. Abdomen elongate-oval, widest at the 4th and 5th segments.

Measurements: *Penenirmus gulosus* (Nitzsch, 1866)
(from Carriker, 1902)

	♂	♀
Head Length	.44	.50
Head Width	.44	.50
Abdomen Width	.50	.61
Total Length	1.40	1.87

Penenirmus jungens (Kellogg, 1896)
Docophorus jungens Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 481, pl. 66, fig. 4.
Type host: *Colaptes auratus* (Linnaeus)--Yellow-shafted Flicker.

Dalgleish (1965) separates this species from *P. auritus* (Scopoli, 1763) by the presence of an average of 4 centro-posterior setae on the pterothorax and tergites III-V. This species of *Penenirmus* is found on all species of *Colaptes* in North America. Kellogg (1896) recorded this species from Kansas, Peters (1928) Ohio, Wilson (1928) New York, Peters (1936) Delaware, Virginia, and New Hampshire, Brimley (1938) North Carolina, Emerson (1940) Oklahoma, Brown and Wilk (1944) Alberta, Judd (1953) Ontario, Whitehead (1954) Quebec and Emerson and Johnson (1961) Oklahoma, Indiana, New York, Iowa, Texas, Virginia, and Mississippi.

Specimens	Host	Locality	Date	Collector
1 ♀, imm.	*Colaptes auratus*	Lee, NH	X-4-1963	J.E.K.

Penenirmus quadripustulatus (Kellogg and Mann, 1912a)
Docophorus californiensis quadripustulatus Kellogg and Mann, 1912a. Ent. News, 23: 57.
Type host: *Pipilo erythropthalmus* (Linnaeus)--Rufous-sided Towhee.

The setae of the abdominal segments are regularly arranged, 4 in a row. Equidistant on each side of the row, close to the posterior margin of the segment is an additional pustulate hair. On the 6th segment there are only 2 central setae and on the penultimate and last segments only the marginal setae are pustulate.

I have found no records of this species being collected in the United States.

Philopterus Nitzsch, 1818. Germar's Mag. Ent., 3: 281.
Type species: *Philopterus ocellatus* (Scopoli, 1763) (By subsequent designation, Newmann, 1906, Bull. Soc. Zool. Fr., 20: 58).
Docophorus Nitzsch, 1818. Germar's Mag. Ent., 3: 289.
Type species: *Philopterus ocellatus* (Scopoli, 1763) (By subsequent designation, Clay 1938a. Entomologist, 71: 207).
Clayiella Eichler, 1940. Zool. Anz., 130: 102.
Type species: *Clayiella schulzkampfhenkeli* Eichler, 1940.
Cypseloecus Conci, 1941a. Boll. Soc. Ent. Ital., 73: 126.
Type species: *Philopterus excisus* Nitzsch, 1818.
Debeauxoecus Conci, 1941a. Boll. Soc. Ent. Ital., 73: 126.
Type species: *Philopterus claviformis* Piaget, 1885.
Docophorulus Eichler, 1944. Stettin. Ent. Ztg., 105: 80.
Type species: *Docophorus communis passeris* Piaget, 1880 (A synonym of *Philopterus fringillae* (Scopoli, 1772).
Tritrabeculus Uchida, 1948. Jap. Med. J., 1: 315.
Type species: *Tritrabeculus goshikidori* Uchida, 1948.
Bitrabeculus Uchida, 1948. Jap. Med. J., 1: 318.
Type species: *Docophorus singularis* Kellogg and Chapman, 1899 (A synonym of *Philopterus picae* (Denny, 1842).
Campephagoecus Eichler, 1952. Zool. Anz., 149: 75.
Type species: *Campephagoecus osculolimbatus* Eichler, 1952.

Head broad, quadrangular, forehead truncate and dorsal anterior plate prominent. Trabeculae large; antennae filiform and similar in the 2 sexes; segment I large. Eyes large with an ocular seta present in most species. Temporal lobes expanded and evenly rounded. Occipital carinae distinct and well pigmented. Prothorax small with convex sides; 1 elongate seta at each posterolateral angle; pterothorax with sides diverging distally; 1 or more elongate setae present at each posterolateral angle and a row of setae along the dorsoposterior margin. Abdomen robust with deeply pigmented plates interrupted medially and with serrate posterior margins. Abdominal chaetotaxy dense, consisting in most species of transverse rows of rather closely set, long setae on or near posterior margin of each abdominal segment. Genitalia of male with short blunt parameres.

Members of this genus are parasitic on birds of the order Passeriformes. In other areas they may be found on the order Trogoniformes.

Philopterus agelaii (Osborn, 1896)
Docophorus agelaii Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 220.
Type host: *Agelaius phoeniceus* (Linnaeus)--Red-winged Blackbird.

This is a small *Philopterus* characterized by a rectangular shaped preantennal region, almost as wide at the tip as at the base of the trabeculae. Trabeculae large, anterior margin curved.

Peters (1928) reports this species from Ohio and Spory (1965) has collected this species on 7 of 61 Red-winged Blackbirds in the same state.

Specimens	Host	Locality	Date	Collector
4 ♀, 4 imm.	*Agelaius phoenicus*	Durham, NH	IV-2-1963	--

Measurements: *Philopterus agelaii* (Osborn, 1896)

		♀	
Head Length	.54	.51	.54
Head Width	.54	.49	.52
Prothorax Width	.30	.28	.30
Pterothorax Width	.45	.45	.46
Abdomen Length	.73	.82	.79
Abdomen Width	.72	.73	.75
Total Length	1.57	1.63	1.65

Philopterus citrinellae curvirostrae (Schrank, 1776)

Pediculus curvirostrae Schrank, 1776. Beitr. Naturgesch.: 117, pl. 5, fig. 8.

Docophorus compar Piaget, 1880. Les Pediculines: 61, pl. 7, fig. 1.

Type host: *Loxia curvirostra* Linnaeus--Red Crossbill.

Typical *Philopterus* form with hyaline margin and dorsal anterior plate indented in front. The indentation in the hyaline margin is not always apparent in mounted specimens. In this subspecies of *P. citrinellae* there are 4 or more setae on the metasternal plate, and in the male 3 (rarely 4) anterior setae on the genital plate.

I have found no published records of this species in the United States.

Specimens	Host	Locality	Date	Collector
5♀, 1♂	*Loxia curvirostra*	Bar Harbor, Me.	Fall, 1937	A.E.B.
1♀, 1♂	" "	" " "	IV-30-1938	M.Sullivan

Philopterus corvi (Linnaeus, 1758)

Pediculus corvi Linnaeus, 1758. Syst. Nat., ed. 10: 612.

Nirmus adustus Olfers, 1816. De Veget...: 88.

Docophorus semisignatus Denny, 1842. Mon. Anopl. Brit.: 41 and 66, pl. 1, fig. 5.

Nirmus coracis Denny, 1852. List Brit. Animals in Brit. Mus. pt. II, Anoplura: 7 (*nn* for *D. semisignatus* Denny, 1842).

Docophorus distinctus Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 477, pl. 65, fig. 5.

Type host: *Corvus corax* Linnaeus--Common Raven.

This species of *Philopterus* may be distinguished from all related species by having the dorsal anterior plate sclerotized only at the anterior end.

Measurements: *Philopterus corvi* (Linnaeus, 1758)
(from Clay and Hopkins, 1950)

	♂	♀
Head Length	.70	.72
Head Width	.66	.75
Abdomen Length	1.00	1.06
Abdomen Width	.85	.97
Total Length	1.95	2.03

Specimens	Host	Locality	Date	Collector
2 ♀, 5 ♂	*Corvus corax*	Stratton, Me.	IX-6-1965	H.Tyler

In the literature, *P. corvi* has been reported many times as the parasite of the crow, *Corvus brachyrhynchos*. The type host for *P. corvi* is the Common Raven and upon examination of *Philopterus* from both of these birds it is obvious that the 2 species are not the same. Those *P. corvi* found on the crow refer to *Philopterus ocellatus osborni* Edwards, 1952 (*nn* for *D. corvi* Osborn, 1896).

Philopterus cristata Malcomson, 1929

Philopterus cristata Malcomson, 1929. Ann. Ent. Soc. Amer., 22: 729, fig. 2.

Type host: *Cyanocitta cristata* (Linnaeus)--Blue Jay.

Head as long as wide, preantennal region broad; clypeus with 2 setae in front and 1 on each side. Dorsal anterior plate very prominent, extending to a point caudad of the mandibles. Eye with a long seta dorsally. Trabeculae large, extending the length of the 1st antennal segment. The temporal margin bears 3 long hairs on each side. Prothorax small with a single long seta in each posterolateral angle. Pterothorax almost as wide as head with 4 long setae in each posterolateral angle and 24 setae along the dorsoposterior margin. Abdomen globose and generally covered with long setae.

Specimens	Host	Locality	Date	Collector
2 ♀	*Cyanocitta cristata*	Durham, NH	IX-30-1964	J.E.K.

After examining 27 blue jays, I cannot agree with the statement made by Malcomson (1929) that, "I have found the blue jay to be very heavily infested with this particular species of louse."

Philopterus excisus microsomaticus Tandan, 1955

Docophorus hirundinis Piaget, 1871 (*nec* Schrank, 1803). Tijdschr. Ent., 14: 134, pl. 7, fig. 13.

Philopterus excisus microsomaticus Tandan, 1955. Ann. Mag. Nat. Hist., (12), 8: 421, figs. 8-12. (*nn* for *D. hirundinis* Piaget, 1871).

Type host: *Hirundo rustica* Linnaeus--Barn Swallow.

Anterior hyaline margin indented medially. Large trabeculae. Dorsal anterior plate prolonged posteriorly into a point; sclerotized and uniformly pigmented. Prothorax with 1 long seta on either side of the midline on the posterodorsal margin. Abdomen rounded, widest at segment V. Tergal plates of segment II approximate; III-VIII with widely separated tergal plates.

Measurements: *Philopterus excisus microsomaticus* (from Tandan, 1955)

	♂	♀
Head Length	.37 - .40	.42 - .48
Head Width	.34 - .35	.39 - .40
Prothorax Width	.18 - .20	.21 - .22
Pterothorax Width	.28 - .30	.34
Abdomen Length	.47 - .51	.70 - .72
Abdomen Width	.45 - .49	.52 - .58
Total Length	1.08 - 1.13	1.39 - 1.42

Specimens	Host	Locality	Date	Collector
1 ♂	*Hirundo rustica*	Albany, NH	V-15-1964	J.E.K.
1 slide	" "	Martha's Vineyard,Mass.	VI-2-1924	G.M.Allen (USNM)

Philopterus fringillae (Scopoli, 1772)
Pediculus fringillae Scopoli, 1772. Ann. V. Hist. Nat.: 125.
Pediculus passeris DeFourcroy, 1785. Ent. Parisiensis, pt. 2: 2519 (*nn* for "*P. subflavescens* Geoffroy").
Docophorus communis passeris Piaget, 1880 (*nec* DeFourcroy, 1785). Les Pediculines: 59.
Type host: *Passer domesticus* (Linnaeus)--House Sparrow.

Hyaline margin with median indentation on anterior margin.

Measurements: *Philopterus fringillae* (Scopoli, 1772) (from Clay and Hopkins, 1951)

	♂	♀
Head Length	.55	.58
Head Width	.50	.56
Prothorax Width	.29	.32
Pterothorax Width	.45	.50
Abdomen Length	.70	1.02
Abdomen Width	.68	.91
Total Length	1.45	1.85

It appears that *P. fringillae* is an uncommon parasite of the House Sparrow since I have not recovered it in 43 examinations of this species of bird. These results are supported by Wilson (1958) who did not find *P. fringillae* in examination of 77 House Sparrows in Kentucky.

Philopterus fuscicollis (Burmeister, 1838)
Docophorus fuscicollis Burmeister, 1838. Handb. Ent., 2: 425.
Type host: *Lanius excubitor* Linnaeus--Northern Shrike.

I have no information on this species of *Philopterus*.

Specimens	Host	Locality	Date	Collector
1 slide	*Lanius excubitor*	Duxbury, Mass.	II-22-1927	A.Peters,Jr. (USNM)
1 slide	" "	Groton, Mass.	XI-11-1939	Wharton-Mason (USNM)
1 slide	" "	Rye, NH	X-26-1934	L.R.Nelson (USNM)

Philopterus fuscoventralis (Osborn, 1896)
Docophorus fusco-ventralis Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 221.
Type host: *Contopus virens* Linnaeus--Eastern Wood Pewee.

Head longer than wide with hyaline margin indented medially; dorsal anterior plate large, projecting as a spine-like point posteriorly to a point midway between the antennae; temporal lobes rounded; occiput nearly straight. Prothorax small, sides diverging slightly. Pterothorax widening rapidly; posterodorsal margin with a row of long setae. Abdomen oval.

Aside from Osborn's (1896) original description, I have found no records of the recovery of this species in the United States.

Philopterus hamatus (Packard, 1870)
Docophorus hamatus Packard, 1870. Amer. Nat., 4: 94, pl. 1, fig. 7.
Type host: *Plectrophenax nivalis* (Linnaeus)--Snow Bunting.

I have been unable to find anything more than the original description of this species which is as follows:

> ...white and has a large triangular head with a very narrow prothorax, not much more than 1/2 as wide as the head; the abdomen is rounded oval, while the trabeculae are very long and hooked.

Specimens	Host	Locality	Date	Collector
1 slide	*Plectrophenax nivalis*	New Haven,Conn.	I-24-1936	R.C.Morrill
1 slide	" "	Duxbury, Mass.	II-22-1927	A.Peters,Jr. (USNM)
1 slide	" "	Springfield,Mass.	1863	MCZ
1 slide	" "	Kittery Pt., Me.	II-?-1908	MCZ

Philopterus hanzaki Balat, 1955

Philopterus hanzaki Balat, 1955. Zool. Ent. Listy Jhrg., 4: 390 and 398, fig. 1.

Type host: *Anthus spinoletta* (Linnaeus)--Water Pipit.

I have no data on this species of Mallophaga.

Philopterus quiscali (Osborn, 1896)

Docophorus quiscali Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 219, fig. 141.

Type host: *Quiscalus quiscula* (Linnaeus)--Common Grackle.

A short broad species very similar to *Philopterus agelaii* (Osborn, 1896). Preantennal region broad, lateral angles rounded, in some cases as wide at tip as at base of trabeculae. Trabeculae large, curved, and with rather acute tips. Pterothorax with long setae along the posterodorsal margin. Eighth abdominal segment with tergal plate entire; other tergites interrupted medially.

Osborn (1896) reports this species from Iowa; Wilson (1928) New York; Peters (1928) Ohio; Peters (1936) Massachusetts; Brimley (1938) North Carolina; and Whitehead (1954) Quebec.

Specimens	Host	Locality	Date	Collector
1 slide	*Quiscalus quiscula*	Dedham, Mass.	IV-30-1927	BMS

Philopterus rutteri (Kellogg, 1899)

Docophorus rutteri Kellogg, 1899. Occ. Pap. Calif. Acad. Sci., 6: 12, pl. 1, fig. 3.

Type host: *Parus atricapillus* (Linnaeus)--Black-capped Chickadee.

Preantennal region flatly convex in front with 1 setae before the preantennal suture and 2 before the trabeculae; trabeculae long, slender, and weakly curving; dorsal anterior plate large, projecting posteriorly beyond the mandibles. Prothorax small with rounded margins and a single pustulated hair in each posterolateral angle, another on the posterior margin just inside of the angles, and 4 grouped together in the median region of the segment. Pterothorax with a seta in the posterolateral angle and 10 setae on each half of the posterior margin. Abdomen oval; lateral angles projecting with long setae.

In addition to the original description of this species from a collection of 1 female and 1 immature specimen from Kodiak Island, the only other report I have found is by Emerson (1940) from Oklahoma.

Philopterus sialii (Osborn, 1896)

Docophorus sialii Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 220.

Docophorus incisus Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 474, pl. 65, fig. 3.

Type host: *Sialia sialia* (Linnaeus)--Bluebird.

Preantennal region with hyaline margin emarginate in front. Dorsal anterior plate with anterior margin emarginate and unevenly sclerotized. Pterothorax obtusely angled on abdomen.

Kellogg (1896) records this species from Kansas; Peters (1928) Ohio; Peters (1936) Florida, North Carolina, New Hampshire, New York, Ohio, South Carolina and Virginia; and Brimley (1938) North Carolina.

Measurements: *Philopterus sialii* (Osborn, 1896)
(from Kellogg, 1896)

	♂	♀
Head Length	.59	.63
Head Width	.56	.63
Abdomen Width	.75	.90
Total Length	1.72	2.12

Specimens	Host	Locality	Date	Collector
1 slide	*Sialia sialia*	Augusta, Me.	VI-26-1943	A.E.B.

Philopterus tropicalis Carriker, 1956
Philopterus tropicalis Carriker, 1956. Florida Ent., 39: 19, figs. 1 and 2. (3 and 4)?
Type host: *Stelgidopteryx ruficollis* (Vieillot)--Rough-winged Swallow.

Preantennal region with narrow frons, hyaline margin and dorsal anterior plate indented medially; temples with 3 long setae on each side. Prothorax very short. Pterothorax with 9 pustulated setae on each side of the midline. As of 1956, the female of this species was unknown and to the best of my knowledge is still unknown.

Measurements: *Philopterus tropicalis* Carriker, 1956

	♂
Head Length	.49
Head Width	.43
Prothorax Width	.28
Pterothorax Width	.39
Abdomen Width	.58
Abdomen Length	.63
Total Length	1.32

PHYSCONELLOIDES

Physconelloides Ewing, 1927. J. Wash. Acad. Sci., 17: 94.
Type species: *Physconelloides ceratoceps* Ewing, 1927.
Goniocotacanthus Guimaraes, 1936. Rev. Mus. S. Paulo, 20: 225.
Type species: *Goniocotacanthus mattogrossensis* Guimaraes, 1936.

Preantennal region broadly and evenly rounded in front; clypeal suture present. Preantennal region armed with a pair of posteriorly pointing, lateral horn-like processes which arise from the chitinous thickening just behind the clypeal suture; antennae short, 2nd segment longest; temporal lobes large, squarish. Prothorax smaller than pterothorax, with sides strongly divergent posteriorly. Pterothorax short, but very broad with rounded lateral margins. Abdomen elongate-elliptical, widest at 4th and 5th segments. Mallophaga of this genus are parasitic on birds of the order Columbiformes.

Physconnelloides zenaidurae (McGregor, 1917)
Goniodes zenaidurae McGregor, 1917. Ent. News, 28: 433, pl. 28, figs. 1 and 4.
Type host: *Zenaidura macroura* (Linnaeus)--Mourning Dove.
Other New England host:
Domestic Pigeon.

The usual host for this species is the Mourning Dove, it being found only occasionally upon the pigeon. *Physconnelloides zenaidurae* has been reported by McGregor (1917) from South Dakota, Peters (1928) Ohio, Peters (1936) from Ohio and Virginia, and Hanson, et al., (1957) from Illinois. All of the above collections were made from the Mourning Dove.

Physconnelloides zenaidurae is the only species of the genus found in New England, therefore, the genus description will serve for species identification.

PICICOLA

Picicola Clay and Meinertzhagen, 1938. Entomologist, 71: 74.
Type species: *Picicola praeposterus* Clay and Meinertzhagen, 1938.
Tyrannicola Carriker, 1956. Florida Ent., 39: 73.
Type species: *Nirmus foedus* Kellogg and Chapman, 1899.

Head circumfasciate; trabeculae narrow and elongate in both sexes; antennae filiform and similar in both sexes. Antennal band with greatly thickened internal margin sometimes cellulated in appearance; occipital bands and suture present; temple bands thickened and sometimes showing cellulated appearance internally. Temples rounded but not greatly swollen. Abdomen elongate with segment I short; pleurites distinct with re-entrant heads. Genitalia with short curved parameres and mesosomal plate rounded posteriorly. Members of this genus are parasitic on birds of the orders Piciformes and Passeriformes.

Picicola mississippiensis (McGregor, 1917a)
Lipeurus mississippiensis McGregor, 1917a. Psyche, 24: 107, pl. 1, figs. 1 and 5.
Type host: *Colaptes auratus* (Linnaeus)--Yellow-shafted Flicker.

Head 1/3 longer than wide, with forehead slightly narrowed to a rounded front. Temples rounded; occiput slightly concave. Trabeculae prominent; antennal sinuses rather shallow; antennal bands conspicuous as wide, dark areas bordering the forehead, lighter anteriorly. Prothorax wider than long, rectangular with front and hind margins almost straight; a long seta at each posterolateral angle. Pterothorax with diverging sides and with 12 long setae along the posterior margin. Abdomen elongate, widest at the 5th segment.

Measurements: *Picicola mississippiensis* (McGregor, 1917a) (from McGregor, 1917a)

	♀
Head Length	.47
Head Width	.34
Prothorax Width	.27
Pterothorax Width	.36
Abdomen Length	.88
Abdomen Width	.43
Total Length	1.62

Described from a single female collected in Mississippi. Peters (1928) reports it from Ohio, Peters (1936) from Delaware, Brimley (1938) North Carolina, Emerson (1940) Oklahoma, Judd (1953) Ontario, and Whitehead (1954) Quebec.

Specimens	Host	Locality	Date	Collector
6	*Colaptes auratus*	Columbus, Ohio	X-3-1919	P.R.Lowry

Picicola orpheus (Osborn, 1896)
Nirmus orpheus Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 227.
Type host: *Dumatella carolinensis* (Linnaeus)--Catbird.

The status of this species and its host are both in doubt at the present time. Edwards (1952) believes that the host, *Dumatella carolinensis* (Linnaeus) is incorrect, and that it should be a species of woodpecker. I have found no records of the collection of this species in the United States.

QUADRACEPS

Quadraceps Clay and Meinertzhagen, 1939. Ann. Mag. Nat. Hist., (11), 4: 453.
Type species: *Degeeriella vanelli* (Denny, 1842) (A synonym of *Nirmus hospes* Nitzsch, 1866).
Koeniginirmus Eichler, 1940. Zool. Anz., 130: 101.
Type species: *Nirmus punctatus* Burmeister, 1838.
Oedicnemiceps Eichler, 1943c. Zool. Anz., 141: 59.
Type species: *Nirmus annulatus* Denny, 1842.

Glareolites Eichler, 1944. Stettin. Ent. Ztg., 105: 80.
Type species: *Nirmus ellipticus* Nitzsch, 1866.
Nirmoides Eichler, 1944. Stettin. Ent. Ztg., 105: 81.
Type species: *Docophorus antennatus* Piaget, 1880 (A synonym of *Nirmus brunneus* Nitzsch, 1866).
Szidatiella Eichler, 1944. Stettin. Ent. Ztg., 105: 81.
Type species: *Docophorus elongatus* Piaget, 1885.
Mjörberginirmus Eichler, 1944. Stettin. Ent. Ztg., 105: 85.
Type species: *Nirmus obliquus* Mjöberg, 1910.
Haematophagus Timmermann, 1950. Fauna Islandica, 2: 1 and 2.
Type species: *Quadraceps haematopi* (Denny, 1842) (A synonym of *Quadraceps auratus* (deHaan, 1829).
Cistellatrix Timmermann, 1953. Bombus, 78/79: 331.
Type species: *Quadraceps decipiens* (Denny, 1842).
Proneptis Timmermann, 1953. Bombus, 78/79: 331.
Type species: *Quadraceps semifissus* (Nitzsch, 1866).
Peripetasma Timmermann, 1954. Zool. Anz., 152: 167.
Type species: *Peripetasma altoasiaticum* Timmermann, 1954.

Quadraceps, which is more widely spread throughout the order Charadriiformes than *Carduiceps* and *Lunaceps*, is separated from them by the hyaline margin arising anterior to the clypeal suture and by the presence of a median dorsal preantennal suture.

Head with broad hyaline margin arising from near the anterior end of clypeal band; clypeal and internal bands fused near their anterior ends but these ends are free. Dorsal antennal bands on each side pass inwards to form a narrow median suture. Pterothorax with lateral margins divergent. Abdomen with segment I small; paratergal plates with elongate re-entrant heads, but without inwardly directed processes. Tergal plates of some or all segments showing either partial or complete division into 2. Segment IX of male clearly demarcated from segment VIII.

Quadraceps alconae (Carriker, 1959)
Alcedoffula alcyonae Carriker, 1959. Novedades Colombianas 1: 207, figs. 6-7.
Type host: *Mergaceryle alcyon* (Linnaeus)--Belted Kingfisher.

Head large, wide at temples and frons. Dorsal anterior plate short and wide; preantennal carinae very heavily and deeply pigmented; trabeculae very short and triangular in shape. Prothorax quadrangular. Male genitalia with pointed parameres. Female unknown.

Measurements: *Quadraceps alconae* (Carriker, 1959)
(from Carriker, 1959)

	♂
Head Length	.49
Head Width	.44
Prothorax Width	.25
Pterothorax Width	.37
Abdomen Length	.80
Abdomen Width	.48
Total Length	1.49

Specimens	Host	Locality	Date	Collector
1 slide	*Mergaceryle alcyon*	Squibnocket, Mass.	VI-11-1936	C.N.Smith (USNM)

Quadraceps assimilis major (Kellogg, 1899)
Nirmus fissus major Kellogg, 1899. Occ. Pap. Calif. Acad. Sci., 6: 15, pl. 2, fig. 2.
Nirmus macrocephalus Waterston, 1914. Ann. S. Afr. Mus., 10: 284, pl. 35, figs. 2 and 5.
Type host: *Charadrius* sp.
New England host:
Charadrius melodus Ord--Piping Plover.

Kellogg describes this subspecies as follows:

Differs from the types of *fissus* by having a hair in the eye, by having 4 pustulated hairs on each lateral half of the posterior margin of the metathorax instead of 3, 2 being median and 2 being near the angle; by having the median longitudinal uncolored line of the abdomen limited to the first 2 segments, and by being markedly larger.

Measurements: *Quadraceps assimilis major* (Kellogg, 1899) (from Kellogg, 1899)

	♂	♀
Head Length	.30	.47
Head Width	.31	.33
Abdomen Width	.38	.44
Total Length	1.61	1.87

Specimen	Host	Locality	Date	Collector
1 ♂	*Charadrius melodus*	Phippsburg, Me.	IX-18-1965	H.Tyler

Quadraceps charadrii hospes (Nitzsch, 1866)
Nirmus hospes Nitzsch, 1866. *In Giebel*, Z. ges. NatWiss., 28: 371.
Nirmus vanelli Denny, 1842 (*nec* Schrank, 1803). Mon. Anopl. Brit.: 51 and 128, pl. 7, fig. 6.
Type host: *Squatarola squatarola* (Linnaeus)--Black-bellied Plover.

Head very long; dorsal anterior plate about as broad as long, lightly sclerotized anteriorly, pre- and postmarginal carinae very dark but narrow; temples with 2 long marginal setae. Gular plate with a central clear area looking like a perforation. Prothorax with 1 long seta in each posterolateral angle. Pterothorax with 5 long setae on each side of the posterodorsal margin. Abdomen elongate; pleurites darkly pigmented; tergites each with 2 tergocentral setae.

Measurements: *Quadraceps charadrii hospes* (Nitzsch, 1866)

	♂	♀
Head Length	.45	.48
Head Width	.31	.33
Prothorax Width	.19	.22
Pterothorax Width	.27	.33
Abdomen Length	.85	1.08
Abdomen Width	.39	.45
Total Length	1.63	1.86

Specimens	Host	Locality	Date	Collector
♀, ♂	*Squatarola squatarola*	Brunswick, Me.	X-27-1964	H.Tyler
♀, ♂	" "	Hampton, NH	X-10-1964	J.E.K.

Quadraceps fissus (Burmeister, 1838)
Nirmus fissus Burmeister, 1838. Handb. Ent., 2: 427.
Nirmus hiaticulae Denny, 1942 (*nec* O. Fabricius, 1780). Mon. Anopl. Brit.: 52 and 136, pl. 11, fig. 10.
Nirmus crassipes Denny, 1952. List Brit. Animals in Brit. Mus., pt. II, Anoplura: 21 (*nn* for *N. fissus* Burmeister, 1838).
Nirmus opacus Kellogg and Chapman, 1899. Occ. Pap. Calif. Acad. Sci., 6: 83, pl. 6, fig. 6.
Type host: *Charadrius hiaticula* Linnaeus.
New England host:
Charadrius semipalmatus Bonaparte--Semipalmated Plover.

Head elongate, conical with colorless clypeal region slightly expanded in front of the suture; 5 marginal setae in the preantennal region; antennae not reaching the occipital margin; temples flatly rounded with 2 long and 2 very short setae; occipital margin straight.

Measurements: *Quadraceps fissus* (Burmeister, 1838) (from Kellogg and Chapman, 1899)

	♂	♀
Head Length	.40	.47
Head Width	.31	.28
Abdomen Width	.47	.45
Total Length	1.11	1.75

Quadraceps hiaticulae hiaticulae (O. Fabricius, 1780)
Pediculus hiaticulae O. Fabricius, 1780. Fauna Groenlandica: 220.
Quadraceps praegricilis Carriker, 1956. Rev. Brasil. Ent., 5: 136, fig. 22.
Type host: *Charadrius hiaticula* Linnaeus.
New England host:
Charadrius semipalmatus Bonaparte--Semipalmated Plover.

Measurements: *Quadraceps hiaticulae hiaticulae* (O. Fabricius, 1780)
(from Clay and Meinertzhagen, 1954)

	♂	♀
Head Length	.42	.42
Head Width	.23	.23
Prothorax Width	.17	.18
Pterothorax Width	.25	.24
Abdomen Length	1.16	1.26
Abdomen Width	.31	.30
Total Length	1.83	1.90

There is a 2nd subspecies found in New England, *Quadraceps hiaticulae boephilus* (Kellogg, 1896) parasitic upon the Killdeer, *Charadrius vociferus* Linnaeus.

Specimens	Host	Locality	Date	Collector
4 ♀, 1♂	*Charadrius vociferus*	Brunswick, Me.	IX-4-1964	H.Tyler

Quadraceps klatti Timmermann, 1954

Quadraceps klatti Timmermann, 1954. Zool. Anz., 152: 172, fig. 9r and 10.

Type host: *Plautus alle* (Linnaeus)--Dovekie.

Anteriorly, the hyaline margin either straight or slightly convex; dorsal anterior plate pentagonal, as wide as long; trabeculae small but reaching at least to the end of the 1st antennal segment; seta in each posterolateral angle; pterothorax with side diverging and posterior angles rounded. Female terminal abdominal segment bilobed; male genitalia with thick heavy parameres.

Measurements: *Quadraceps klatti* Timmermann, 1954.

	♂	♀
Head Length	.42	.48
Head Width	.34	.40
Prothorax Width	.22	.25
Pterothorax Width	.31	.43
Abdomen Length	.72	1.02
Total Length	1.36	1.77

Specimens	Host	Locality	Date	Collector
12 ♀, 8♂	*Plautus alle*	Bar Harbor, Me.	XI-24-1937	A.E.B.
2 slides	" "	Osterville, Mass.	I-21-1931	G.L.Austin,Jr. (USNM)
1 slide	" "	" "	I-21-1931	BMS

Quadraceps nigrolimbatus (Mjöberg, 1910)
Nirmus nigrolimbatus Mjöberg, 1910. Ark. Zool., 6: 135, pl. 5, fig. 4.
Type host: *Limnodromus scolopaceus* (Say)--Long-billed Dowitcher.
Other New England host:
Limnodromus griseus (Gmelin)--Short-billed Dowitcher.

I have no description of this species. Both of these birds are occasional in New England, being found here during migrations.

Specimens	Host	Locality	Date	Collector
1 slide	*Limnodromus griseus*	Seabrook, NH	VIII-27-1933	L.R.Nelson (USNM)

Quadraceps nychthemerus (Burmeister, 1838)
Nirmus nychthemerus Burmeister, 1838. Handb. Ent., 2: 428.
Nirmus urniger Giebel, 1861. Z. ges. NatWiss., 18: 315 (*nn* for *N. nychthemerus* Burmeister, 1838).
Nirmus mesosomelas Nitzsch, 1874. *In Giebel*, Insecta Epizoa: 174, pl. 5, fig. 8.
Type host: *Sterna albifrons* Pallas--Least Tern.

I have no data on this species of *Quadraceps* and have not collected the Least Tern. Peters (1936) listed *Degeeriella* sp. from the Least Tern collected in South Carolina and Louisiana which is probably this species.

Quadraceps obliquus (Mjöberg, 1910)
Nirmus obliquus Mjöberg, 1910. Ark. Zool., 6: 148, pl. 2, figs. 2 and 5.
Type host: *Uria aalge* (Pontoppidan)--Common Murre.

I have no data on this species of *Quadraceps*.

Quadraceps ornatus ornatus (Grube, 1851)
Nirmus ornatus Grube, 1851, Middendorff's sibir. Reise, 2: 477, pl. 31, fig. 4.
Nirmus lineolatus atrimarginatus Kellogg and Chapman, 1899. Occ. Pap. Calif. Acad. Sci., 6: 75.
Type host: *Larus canus* Linnaeus--Mew Gull.
New England host:
Larus marinus Linnaeus--Great Black-backed Gull.

An easily recognized species because of the contrasting patterns on the body. Body white except for dark brown pleural plates and their re-entrant heads; light brown transverse bands on abdominal segments II-VII on female, II-VI on male. Lateral margin and a portion of the posterior margin of the prothorax rimmed in black. Several black blotches present along the lateral margins of the head. Dorsal anterior plate with anterior margin lightly sclerotized.

Specimens	Host	Locality	Date	Collector
2 slides	*Larus marinus*	Marshfield, Mass.	XII-30-1930	USNM
1 slide	" "	" "	XII-30-1930	BMS

Quadraceps ornatus paulschulzei (Timmermann, 1949) is found on the Black-legged Kittiwake.

Another subspecies, *Quadraceps ornatus striolatus* (Nitzsch, 1866), is found on *Larus hyperboreus* Gunnerus--Glaucous Gull and *Larus argentatus* Pontoppidan--Herring Gull.

Specimens	Host	Locality	Date	Collector
7 ♀, 3 ♂	*Larus argentatus*	Lee, NH	VIII-25-1964	J.E.K.

Measurements: *Quadraceps ornatus*

	♂	♀
Head Length	.57	.58
Head Width	.55	.60
Prothorax Width	.30	.31
Pterothorax Width	.49	.49
Abdomen Length	1.12	1.18
Abdomen Width	.66	.69
Total Length	2.05	2.13

Quadraceps punctatus regressus Timmermann, 1952

Quadraceps punctatus regressus Timmermann, 1952. Ann. Mag. Nat. Hist., (12), 5: 215.

Type host: *Larus argentatus* Pontoppidan--Herring Gull.

This species may be separated from *Quadraceps ornatus* which may be found on the same host, by the following characters: head always considerably longer than wide, pointed; mandibles weak and small; antennae uncolored. In *Q. ornatus* the head is a little longer than wide; the mandibles are large; and the last segment of the antenna is brown in adult forms.

Quadraceps punctatus sublingulatus Timmermann, 1952, is found on *Larus delawarensis* Ord--Ring-billed Gull and *Larus philadelphia* (Ord) differing from *regressus* in lacking dark anterior spots on the pterothorax.

Quadraceps ravus (Kellogg, 1899)

Nirmus furvus ravus Kellogg, 1899. Occ. Pap. Calif. Acad. Sci., 6: 14, pl. 2, fig. 1.

Degeeriella subfusca Blagoveshtchensky, 1948. Mag. Parasit., Leningr., 10: 286, figs. 20 and 20a.

Type host: *Actitis macularis* (Linnaeus)--Spotted Sandpiper.

A dark species, short and quite stout, lacking median longitudinal uncolored line across the first 6 or 7 abdominal segments.

Measurements: *Quadraceps ravus* (Kellogg, 1899)

	♂	♀ *
Head Length	.40	.40
Head Width	.30	.31
Prothorax Width	.19	--
Pterothorax Width	.30	--
Abdomen Length	.72	--
Abdomen Width	.40	.37
Total Length	1.38	1.43

* from Kellogg (1899)

Specimens	Host	Locality	Date	Collector
1 ♂	*Actitis macularis*	Durham, NH	IX-4-1965	B.Barrett
1 slide	" "	Orono, Me.	--	Cornell Coll.

Quadraceps sellatus sellatus (Burmeister, 1838)

Nirmus sellatus Burmeister, 1838. Handb. Ent., 2: 428.

Philopterus stellatus Gervais, 1844. In Walckenaer, Hist. Nat. Insectes, 3: 346 (misspelling).

Nirmus sellinger Giebel, 1861. Z. ges. NatWiss., 18: 315 (*nn* for *N. sellatus* Burmeister, 1838).

Type host: *Sterna hirundo* Linnaeus--Common Tern.

I have no data on this species of Mallophaga.

Quadraceps similis (Giebel, 1866)

Nirmus similis Giebel, 1866. Z. ges. NatWiss., 28: 374.

Nirmus interruptus Piaget, 1880. Les Pediculines: 173, pl. 14; fig. 6.

Nirmus clypeatus Kellogg and Paine, 1914. Rec. Indian Mus., 10: 237, pl. 14, fig. 3.

Degeeriella austini Peters, 1931. Ann. Ent. Soc. Amer., 24: 585, fig. 2.

Degeeriella dissimilis Blagoveshtchensky, 1948. Mag. Parasit., Leningr., 10: 283, figs. 15 and 15a.

Type host: *Tringa nebularis* (Gunnerus).

New England host:

Totanus melanoleucus (Gmelin)--Greater Yellowlegs.

An elongate *Quadraceps* with posterolateral angles of the pterothorax with 2 long and 3 short setae; 3 setae near the middle of the dorsal margin of the pterothorax. Abdominal pleurites narrow. Male genitalia distinctive, the parameres and endomeres are sharply elbowed and pointed.

Specimens	Host	Locality	Date	Collector
4 ♀, 3 ♂	*Totanus melanoleucus*	Durham, NH	VIII-30-1965	J.E.K.

Quadraceps strepsilaris (Denny, 1842)

Nirmus strepsilaris Denny, 1842. Mon. Anopl. Brit.: 52 and 135, pl. 11, fig. 4.

Nirmus subcingulatus Nitzsch, 1866. *In Giebel*, Z. ges. NatWiss., 28: 372.

Nirmus luprepes Kellogg and Chapman, 1902. J. N. Y. Ent. Soc., 10: 21, pl. 3, fig. 1.

Type host: *Arenaria interpres* (Linnaeus)--Ruddy Turnstone.

Preantennal region with 4 marginal hairs; trabeculae prominent; antennae short reaching 2/3 distance to the occipital margin, first 3 segments almost colorless, last 2 brown; temples with 2 long setae; dorsal anterior plate shield-shaped. Prothorax quadrangular; sides slightly diverging; posterolateral angle with 1 short seta. Pterothorax with widely diverging sides; posterolateral angles with 3 long setae. Abdomen elongate-elliptical; posterior angles of the segments slightly projecting; 1 or 2 setae in posterior angles; 2 long setae on the posterodorsal margins of the abdominal segments.

Specimens	Host	Locality	Date	Collector
1♀, 1♂	*Arenaria interpres*	Hampton, NH	IX-9-1965	B.Barrett
1 slide	" "	Rye, NH	VIII-30-1932	L.R.Nelson (USNM)

The Hampton collection yielded 1 female and 1 immature *Quadraceps* which I was unable positively to place into this species.

Quadraceps waterstoni Hopkins and Timmermann, 1954

Quadraceps waterstoni Hopkins and Timmermann, 1954. Trans. R. Ent. Soc. London, 105: 143, fig. 9; pl. 2, figs. 11-12.

Type host: *Tringa solitaria* Wilson--Solitary Sandpiper.

A moderately narrow, very dark species. Lateral outlines of clypeus straight. Male with 1st abdominal tergite completely divided, 2nd incised well beyond middle, 3rd nearly to middle, IV-VI slightly divided, VII-VIII divided. Female abdominal tergite I divided, II-III deeply incised, IV-V divided to middle, VI-VII slightly incised.

Hopkins and Timmermann (1954) report this species from Massachusetts.

Specimens	Host	Locality	Date	Collector
1♀, 2♂	*Tringa solitaria*	Durham, NH	IX-4-1965	B.Barrett
3♀, 3♂	" "	Hampton Falls, NH	V-10-1965	B.Barrett

Measurements: *Quadraceps waterstoni* Hopkins and Timmermann

	♂	♀
Head Length	.37	.40
Head Width	.24	.25
Prothorax Width	.16	.18
Pterothorax Width	.22	.24
Abdomen Length	.88	1.14
Abdomen Width	.31	.34
Total Length	1.50	1.80

RALLICOLA

Oncophorus Piaget, 1880 (*nec* Rudow, 1870). Les Pediculines: 213.
Type species: *Oncophorus bisetosus* Piaget, 1880 (By subsequent designation, Hopkins and Clay, 1951, Checklist of Mallophaga: 317).

Rallicola Johnston and Harrison, 1911. Proc. Linn. Soc. N. S. W., 36: 324.
Type species: *Oncophorus attenuatus* (Burmeister, 1838) (A synonym of *Rallicola ortygometrae* Schrank, 1781).

Parricola Harrison, 1915. Parasitology, 8: 90.
Type species: *Rallicola sulcatus* Piaget, 1880.

Aptericola Harrison, 1915. Parasitology, 8: 90.
Type species: *Rallicola* (*Aptericola*) *gadowi* Harrison, 1915.

Furnaricola Carriker, 1944. Bol. Ent. Venezol., 3: 83.
Type species: *Furnaricola acutifrons* Carriker, 1944.

Corvicola Carriker, 1949. Proc. U. S. Nat. Mus., 100: 3.
Type species: *Corvicola insulanus* Carriker, 1949.

Epipicus Carriker, 1949. Rev. Brasil. Biol., 9: 309.
Type species: *Epipicus scapanoides* Carriker, 1949.

Head longer than wide, never with a complete carina around anterior margin; marginal carina interrupted laterally. Dorsal preantennal suture, when present, originating at distal end of marginal carina. Dorsal clypeal plate usually present and with rounded, flattened, or acuminate posterior margin but never produced into a thickened point posteriorly. Ventral carina always interrupted medially and extended forward and fused to distal end of marginal carina at each side. Temporal lobes slightly expanded; gular plate moderately well developed. Prothorax small, narrow and distinct from pterothorax, the latter with lateral margins divergent and posterior margin prolonged as a median point. Abdomen in both sexes elongate. Abdominal segments IX-X fused and not separated from segment XI by a definite suture. Tergal plates IX-X continuous across the segment and only slightly narrowed medially. Female with edge of vulva set with fine setae; small spine-like setae and a tubercle on ventrolateral edge of segment IX bearing 1-3 long, stout hairs. Male genitalia with mesosome usually shorter than parameres and often a well sclerotized penis, with opening terminal or ventro-terminal, rarely dorso-terminal. Parameres varying in shape but always elongate.

Rallicola advenus (Kellogg, 1896)

Oncophorus advena Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 133, pl. 11, figs. 1 and 2.

Docophorus minuto-trabeculatus Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 221.

Type host: *Fulica americana* Gmelin--American Coot.

A short stout species, with a short wide head. Hyaline margin of forehead not extended, broadly rounded; antennae sexually dimorphic, the male with the 1st antennal segment enlarged and elongated. Abdominal tergites II-VII in the female, and II-IV in the male, interrupted medially. Abdominal sternites III-VI in both sexes with 6 or 7 medium length setae on the posterior margins.

Kellogg (1896) collected 1 male and 1 female in California. Osborn (1896) collected this species from a stuffed American Coot skin in Iowa. Peters (1936) reports it from Washington, D. C., Louisiana, and South Carolina. Emerson (1940) from Oklahoma, and Emerson (1955) from Iowa, Louisiana, New Mexico, and Kansas.

Measurements: *Rallicola advenus* (Kellogg, 1896) (from Emerson, 1955)

	♂	♀
Head Length	.33	.30
Head Width	.34	.40
Prothorax Width	.23	.26
Pterothorax Width	.33	.35
Total Length	1.20	1.40

Rallicola kelloggi Emerson, 1957

Rallicola kelloggi Emerson, 1957. Proc. Ent. Soc. Wash., 59: 188, fig. 3.

Type host: *Rallus limicola* Vieillot--Virginia Rail.

Head slender with wide hyaline margin. Antennae sexually dimorphic, the male with the 1st segment enlarged and elongate, bearing an appendage, the female antennae filiform. Posterior margin of pterothorax with 4 pairs of long setae. Abdominal tergite II of male interrupted medially. Abdominal tergites II-III of female interrupted medially and IV indented medially; each tergite with a pair of setae located medially on the posterior margin; sternites III-VI with 4 setae on the posterior margin; and sternites VII-VIII with 2 setae on the posterior margin.

Peters (1928) and Geist (1931) report this species from Ohio. Emerson (1957) reports collections from Maryland, Ohio, British Columbia, and New Jersey.

Measurements: *Rallicola kelloggi* Emerson, 1957
(from Emerson, 1954)

	♂	♀
Head Length	.42	.45
Head Width	.35	.36
Prothorax Width	.21	.23
Pterothorax Width	.28	.30
Total Length	1.26	1.42

Rallicola mystax (Giebel, 1874)
Nirmus mystax Giebel, 1874. Insecta Epizoa: 301.
Type host: *Porzana porzana* Linnaeus.
New England host:
Porzana carolina (Linnaeus)--Sora.

Head long and slender with a wide hyaline margin. Antennae sexually dimorphic, 1st segment of the male antenna enlarged and elongated with an appendage. Abdominal segment II with tergite sometimes divided, the other tergites transversely continuous in both sexes. Abdominal sternites III-VI with 4 long setae on the posterior margins.

There are 2 species of *Rallicola* found on the Sora; thus, all records published before 1957 when the 2nd species was described must be questioned. Emerson (1957) reports this species from Idaho.

Measurements: *Rallicola mystax* (Giebel, 1874)

	♂	♀
Head Length	.37	.40
Head Width	.32	.35
Prothorax Width	.18	.21
Pterothorax Width	.27	.30
Total Length	1.30	1.30

Specimens	Host	Locality	Date	Collector
1 ♂	*Porzana carolina*	Wooster, Ohio	VIII-25-1917	P.R.Lowry

Rallicola ortygometrae californicus (Kellogg and Chapman, 1899)
Oncophorus bisetosus californicus Kellogg and Chapman, 1899.
Occ. Pap. Calif. Acad. Sci., 6: 106, pl. 7, fig. 6.
Type host: *Rallus longirostris* Boddaert--Clapper Rail.

Abdominal tergites II-VIII in the female, and II-III in the male; interrupted medially. Antennae similar in the 2 sexes.

Specimens	Host	Locality	Date	Collector
9♀, 13♂	*Rallus longirostris*	Seabrook, NH	V-10-1965	B.Barrett

Rallicola ortygometrae subporzanae Emerson, 1957

Rallicola ortygometrae subporzanae Emerson, 1957. Proc. Ent. Soc. Wash., 59: 186, fig. 2.

Type host: *Porzana carolina* (Linnaeus)--Sora.

This subspecies is very similar to the one above, except all tergites in both sexes are transversely continuous.

Measurements: *Rallicola ortygometrae subporzanae* Emerson (from Emerson, 1957)

	♂	♀
Head Length	.48	.44
Head Width	.38	.36
Prothorax Width	.22	.21
Pterothorax Width	.32	.32
Total Length	1.43	1.51

RHYNONIRMUS

Rhynonirmus Thompson, 1935. Parasitology, 27: 281.

Type species: *Lipeurus infuscatus* Osborn, 1896.

Head variable in shape; strongly thickened along clypeal edge; signature indefinite though an irregular transverse clypeal suture is present; mouth parts unmodified; oral fossa remote, transverse, rounded, oblong. Trabeculae distinct, not exceeding the 1st antennal joint, generally much shorter. Antennae variable in shape. Occipital edge nearly straight. Metathorax very wide angled posteriorly. First abdominal tergite with sides divergent; tergites transversely continuous, transparent near spiracles. Tergites II-VI meniscus shaped, and the intertergal membrane becomes strongly chitinized in fully adult specimens. Pleurites simple. Chaetotaxy, 1 dorsal and 1 ventral row. Male genitalia. Basal plate widest posteriorly. Mesosome triangular, shortly produced posteriorly; parameres excessively thin towards inner edge, and closely fitting the mesosome. The latter bears 1 pair of minute bristles on the wider portion, and 3 pairs apically.

Rhynonirmus parsonae Clay, 1961

Rhynonirmus parsonae Clay, 1961. Bull. Brit. Mus. (N. H.), Ent., 11: 50, figs. 9-11, and plate 1, figs. 2, 5 and 6.

Type host: *Philohela minor* (Gmelin)--American Woodcock.

Male with tergite II completely separated and with 2 terminal and 2 subterminal setae on distal end of "penis". Female with tergites II-V or VI deeply indented medially and VI or VII and sometimes VIII with a shallow notch.

Peters (1928) records this species from Ohio and Clay (1961) has examined 16 males and 28 females from Massachusetts.

Specimens	Host	Locality	Date	Collector
35 ♀, 9 ♂	*Philohela minor*	Kingston, RI	VI-25-1902	A.Moorehouse

Rhynonirmus scolopacis (Denny, 1842)
Nirmus scolopacis Denny, 1842. Mon. Anopl. Brit.: 54 and 149, pl. 2, fig. 8.
Nirmus truncatus Nitzsch, 1866 (*nec* Olfers, 1816). *In Giebel*, Z. ges. NatWiss., 28: 375.
Lipeurus emarginatus Piaget, 1880. Les Pediculines: 328, pl. 28, fig. 2.
Nirmus truncatus magnocephalus Carriker, 1902. J. N. Y. Ent. Soc., 10: 218, pl. 20, fig. 4.
Type host: *Capella gallinago* (Linnaeus)--Common Snipe.

Carriker (1902) reports this species from Nebraska. I have not collected this species and have no records of its collection in New England.

Measurements: *Rhynonirmus scolopacis* (Denny, 1842) (from Carriker, 1902)

	♀
Head Length	.46
Head Width	.31
Abdomen Width	.34
Total Length	1.70

ROTUNDICEPS

Rotundiceps Edwards, 1952. Psyche, 59: 28.
Type species: *Nirmus cordatus* Osborn, 1896.

Head broadly rounded, slightly broader than long, only slightly buttressed marginally. Relatively strongly buttressed around the bases of the antennae and mandibular articulations. Signature only barely represented by small irregular sclerotized area. Posterior margin of head armed with short stout setae. Rounded, lightly sclerotized gular area. Posterior margin of pterothorax with complete although irregular row of long setae. Abdomen slightly longer than broad, lightly sclerotized without obvious delineation of tergites and sternites. Spiracles 6, on morphological segments III-VIII. Mid-dorsal and mid-ventral double rows of setae on proximal 7 segments. All spiracles except 1st and last with long setae posterior to each on border of tergite. In male, the first 6 tergites narrowed medially; with 7th separated into 2 parts, the 8th complete. Male genital opening dorso-terminal.

Rotundiceps cordatus (Osborn, 1896)
Nirmus cordatus Osborn, 1896. Bull. U. S. Bur. Ent., (n. s.), 5: 228, pl. 2, fig. a.
Nirmus lucidus Kellogg and Mann, 1912. Ent. News, 23: 60.
Type host: *Limosa fedoa* (Linnaeus)--Marbled Godwit.

This is the only known species in the genus. The Cornell University collection contains a slide of this species collected at Popham Beach, Phippsburg, Maine.

SAEMUNDSSONIA

Saemundssonia Timmermann, 1935. Zool. Anz., 114: 97.
Type species: *Philopterus gonothorax* Giebel, 1874.
Hastaephorus Keler, 1936. Arb. Morph. Tax. Ent. Berlin-Dahlem, 3: 261.
Type species: *Docophorus alpinus* Giebel, 1874 (A synonym of *Docophorus tringae* (O. Fabricius, 1780).
Pufinoecus Eichler, 1949a. Boll. Soc. Ent. Ital., 79: 12.
Type species: *Puffinoecus peusi* Eichler, 1949.

Head large, longer than wide, forehead narrowed and flattened anteriorly with a hyaline margin and concave sides. Central anterior plate distinct, modified by internal thickening and with a posteriorly directed point. Carinae of head striking in appearance; temporal carinae passing from occipital margin of head across temples, continuous with temporal margin above well developed eyes. Ocular seta on ventral lens of each eye. Antennae filiform, similar in the 2 sexes; trabeculae large and well developed. Temporal lobes evenly expanded and rounded. Prothorax short, sides slightly diverging; pterothorax large, sides diverging; posterior margin broadly convex with a row of long setae transversely positioned. Abdomen broad with prominent sternal plates; sternite VII with posteriorly directed pointed process at each anterolateral angle. Parameres of male genitalia long, curved, rod-shaped.

Saemundssonia conica (Denny, 1842)
Docophorus conicus Denny, 1842. Mon. Anopl. Brit.: 45 and 90, pl. 5, fig. 2.
Docophorus fuliginosus hawaiiensis Kellogg and Chapman, 1902. J. N. Y. Ent. Soc., 10: 157.
Philopterus wallacei Johnston and Harrison, 1912. Trans. N. Z. Inst., 44: 369, figs. 5-6.
Philopterus numeniicola Johnston and Harrison, 1912. Trans. N. Z. Inst., 44: 372, figs. 11-12.
Type host: *Pluvialis apricaris* (Linnaeus).
New England host:
Charadrius vociferus Linnaeus--Killdeer.

Head longer than wide, with elongate concave-sided clypeus; evenly rounded temporal lobes, and slightly concave posterior margin. Prothorax with sides diverging and hind margin slightly convex. Pterothorax with posterolateral angles not truncated but acute, projecting posteriorly over the abdomen. Abdomen oval.

A subspecies of *Saemundssonia conica*, *S. conica naumanni*, is found on the Black-bellied Plover.

Saemundssonia conica naumanni (Giebel, 1874)
Docophorus naumanni Giebel, 1874. Insecta Epizoa: 100.
Docophorus fuliginosus Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 80, pl. 3, fig. 2.
Type host: *Squatarola squatarola* (Linnaeus)--Black-bellied Plover.

Kellogg (1896) records this species from Kansas, and Peters (1936) from Massachusetts and New Hampshire.

Specimens	Host	Locality	Date	Collector
1 slide	*Squatarola squatarola*	Rye, NH	IX-19-1932	L.R.Nelson (USNM)

Measurements: *S. conica naumanni* (Giebel, 1874) (from Kellogg, 1896)

	♂	♀
Head Length	.60	.65
Head Width	.53	.65
Abdomen Width	.65	.90
Total Length	1.62	2.00

"*Saemundssonia cordiceps* (Piaget, 1880)"
Docophorus cordiceps Piaget, 1880 (*nec* Giebel, 1874). Les Pediculines: 664, pl. 54, fig. 7.
Type host: *Arenaria interpres* (Linnaeus)--Ruddy Turnstone.

I have no information concerning this species of *Saemundssonia*.

Saemundssonia haemastica Carriker, 1956
Saemundssonia haemastica Carriker, 1956. Florida Ent., 39: 31, figs. 26-28.
Type host: *Limosa haemastica* (Linnaeus)--Hudsonian Godwit.

Carriker (1956) records this species from Nebraska and Kansas and states that this species differs from species of *Saemundssonia* collected from *Limosa lapponica*, Bar-tailed Godwit, and from *Limosa limosa*, Black-tailed Godwit, by a longer and narrower head. However, he gave no measurements from these 2 hosts for comparison.

Specimens	Host	Locality	Date	Collector
1♀, 1 imm.	*Limosa haemastica*	Plum Island, Mass.	X-31-1964	--

Measurements: *S. haemastica* Carriker, 1956

	♀ Carriker, 1956	♀ Plum Island
Head Length	.67	.63
Head Width	.62	.61
Prothorax Width	.35	.33
Pterothorax Width	.51	.49
Abdomen Width	.90	.93
Total Length	2.09	2.02

Saemundssonia lari lari (O. Fabricius, 1780)
Pediculus lari O. Fabricius, 1780. Fauna Groenlandica: 219.
Saemundssonia gonothorax lariphaga Timmermann, 1949. Verh. Visind. Isl. (2), 3: 8.
Saemundssonia gonothorax lariphaga Eichler, 1950 (*nec* Timmermann, 1949). Verh. Visind. Isl. (3), 1: 13, figs. 10-13.
Type host: *Larus hyperboreus* Gunnerus--Glaucous Gull.
Other New England hosts:
Larus glaucoides Meyer--Iceland Gull.
Larus marinum Linnaeus--Great Black-backed Gull.
Larus argentatus Pontoppidan--Herring Gull.
Larus delawarensis Ord--Ring-billed Gull.
Larus atricilla Linnaeus--Laughing Gull.
Rissa tridactyla (Linnaeus)--Black-legged Kittiwake.

In *S. l. lari* the tergal plates of abdominal segment II are joined medially in both sexes and the dorsal abdominal setae of the female do not form a continuous line across the segment, but occur only along the posterior margins of the tergal plates. In the male genitalia there is no sclerotized cross-bar at the distal end of the basal plate and the endomeral projections are fused medially.

Specimens	Host	Locality	Date	Collector
5 slides	*Larus marinus*	Marshfield, Mass.	XII-30-1930	USNM
9 ♀, 5 ♂	" "	Hampton, NH	X-31-1964	J.E.K.
1 slide	" "	Rye, NH	XI-10-1932	L.R.Nelson (USNM)
1 slide	*Larus argentatus*	Norwalk, Conn.	V-6-1928	USNM
1 slide	" "	" "	V-6-1928	BMS
1 slide	" "	Little Duck Isld.,Me.	--	Cornell Coll.
1 slide	" "	Cape Cod, Mass.	VII-30-1927	C.M.Herman
--	" "	Danvers, Mass.	VIII-19-1964	--
--	" "	Malden, Mass.	1965	--
1 slide	" "	N.Eastham, Mass.	I-12-1932	M.Brown (USNM)
1 slide	" "	Oak Bluffs, Mass.	XI-14-1941	C.N.Smith (USNM)
--	" "	Lee, NH	VIII-25-1964	J.E.K.
--	" "	Rye, NH	XII-14-1964	J.E.K.
1 slide	*Larus delawarensis*	Chatham, Mass.	IV-15-1936	USNM
--	*Larus atricilla*	Massachusetts	--	(Peters,1936)
7 ♀, 4 ♂	*Rissa tridactyla*	Isleford, Me.	III-27-1936	A.E.B.

Measurements: *S. lari* from *Larus marinus*

	♂	♀
Head Length	.60	.60
Head Width	.60	.66
Prothorax Width	.33	.36
Pterothorax Width	.47	.51
Abdomen Length	.82	1.06
Abdomen Width	.82	1.02
Total Length	1.78	2.25

Peters (1936) records this species from the Great Black-backed Gull in Massachusetts and New Hampshire and Brimley (1938) from North Carolina.

Measurements: *S. lari* from *Larus argentatus*

	♂	♀
Head Length	.58	.61
Head Width	.58	.66
Prothorax Width	.34	.36
Pterothorax Width	.48	.52
Abdomen Length	.82	.93
Abdomen Width	.87	.93
Total Length	1.75	1.92

Peters (1936) reports this species from Connecticut, Florida, Louisiana, Massachusetts, Maine, and South Carolina; Brimley (1938) from North Carolina; and Stirrett (1952) from Ontario.

Measurements: *S. lari* from *Rissa tridactyla*

	♂	♀
Head Length	.55	.61
Head Width	.54	.63
Prothorax Width	.31	.36
Pterothorax Width	.43	.51
Abdomen Length	.72	.84
Abdomen Width	.79	.93
Total Length	1.59	1.83

Saemundssonia laticaudata (Rudow, 1869)

Docophorus laticaudatus Rudow, 1869. Beitr. Kenntn. Malloph.: 12.

Type host: *Thalasseus sandvicensis* (Latham)--Sandwich Tern.

New England host:

Thalasseus maximus (Boddaert)--Royal Tern.

Males of this species are characterized by the basal plate without a distal cross-bar; parameres greater than .20 mm in length; mesosomal setae in a linear arrangement, occasionally clustered on 1 side; inner face of paramere head with a slight basal concavity; dorsal anterior plate .16-.18 mm in width; 4-9 setae on margin of abdominal sternite VI. Females of *S. laticaudata* lack an emargination

on the hyaline anterior margin of the head; thoracic sternal plate with setae only on the posterior margin; sternite VII with posterolateral angles fused to subgenital plate; and width at temples greater than .63 mm.

Specimens	Host	Locality	Date	Collector
4 ♀, 1 ♂	*Thalasseus maximus*	Hampton, NH	IX-1-1954	D.Dupee

Saemundssonia lockeyi Clay, 1949

Saemundssonia lockeyi Clay, 1949. Amer. Mus. Novit., no. 1409: 11, figs. 17, 24, and 25.
Type host: *Sterna vittata* Gmelin.
New England host:
Sterna paradisaea Pontoppidan--Arctic Tern.

Male basal plate lacking a cross-bar; endomere with terminal, lightly sclerotized, evenly rounded process; parameres wider than those of *S. sternae*; length of paramere greater than .20 mm; setae of mesosome in a clustered arrangement.

The females of *S. lockeyi* cannot be distinguished from those of *S. sternae* on the Common Tern or those infesting the Sandwich Tern and Sooty Tern.

Specimens	Host	Locality	Date	Collector
1 slide	*Sterna paradisaea*	Ship Isle, Me.	--	Cornell Coll.

Saemundssonia melanocephalus (Burmeister, 1838)

Docophorus melanocephalus Burmeister, 1838. Handb. Ent., 2: 426.
Type host: *Sterna albifrons* Pallas--Least Tern.

Males of this species are easily distinguished by the presence of a terminal, strongly sclerotized tooth-like process on the endomere. In the females, the 7th sternite has the posterolateral angles fused to the subgenital plate; width at the temples is less than .62 mm but more than .57 mm; width of dorsal anterior plate .14 to .18 mm.

Ward (1955) reports this species from South Carolina.

Saemundssonia merguli (Denny, 1842)

Docophorus merguli Denny, 1842. Mon. Anopl. Brit.: 42 and 72, pl. 3, fig. 7.
Type host: *Plautus alle* (Linnaeus)--Dovekie.

Head with large anterior hyaline margin not emarginate; dorsal anterior plate large, width .15 mm. Trabeculae large; antennae filiform, narrow, segments short. Pterothorax with 10 marginal dorsal setae. Abdomen ovoid; tergite II undivided. Male genitalia with narrow parameres, bladelike and slightly curved.

Peters (1936) reports this species from Massachusetts, New Hampshire, Pennsylvania, and South Carolina. Brimley (1938) reports it from North Carolina.

Specimens	Host	Locality	Date	Collector
1 ♀	*Plautus alle*	Durham, NH	XII-7-1962	--
1 slide	" "	Bar Harbor, Me.	XI-24-1937	A.E.B.
1 slide	" "	Mt. Desert, Me	XII-3-1934	A.E.B.
1 slide	" "	Massachusetts Bay	XII-28-1882	MCZ
1 slide	" "	Monument ?, Mass.	XII-14-1871	W.Hope (MCZ)
1 slide	" "	N. Eastham, Mass.	XI-11-1932	O.L.Austin (USNM)
1 slide	" "	Osterville, Mass.	I-21-1931	USNM
1 slide	" "	" "	I-21-1931	BMS

Measurements: *S. merguli*

	♂	♀
Head Length	.55	.60
Head Width	.45	.49
Prothorax Width	.28	.31
Pterothorax Width	.36	.42
Abdomen Length	.61	.93
Abdomen Width	.63	.81
Total Length	1.45	1.86

Saemundssonia platygaster (Denny, 1842)

Docophorus platygaster Denny, 1842. Mon. Anopl. Brit.: 44 and 83, pl. 2, fig. 5.

Docophorus peristica Kellogg and Kuwana, 1902. Proc. Wash. Acad. Sci., 4: 462, pl. 28, fig. 2.

Philopterus chenæmycha Seguy, 1949. Mem. Inst. Sci. Madagascar, 2A: 166, figs. 3-5.

Saemundssonia optimalis Eichler, 1953. *In Neithammer*, Bonn. Zool. Beitr., 4: 275, fig. 37.

Type host: *Charadrius hiaticula* Linnaeus.

New England hosts:

Charadrius semipalmatus Bonaparte--Semipalmated Plover.

Charadrius melodus Ord--Piping Plover.

Actitis macularia (Linnaeus)--Spotted Sandpiper.

Tringa solitaria Wilson--Solitary Sandpiper.

Totanus melanoleucus (Gmelin)--Greater Yellowlegs.

Calidris canutus (Linnaeus)--Knot.

Head conical; almost as long as wide; clypeus short, rounded anteriorly; dorsal anterior plate pyriform; temporal area rounded with 3 setae. Prothorax trapezoidal with 2 setae in each posterolateral angle. Pterothorax rounded posteriorly with 5 or 6 setae on each side of the mid-line on the dorsal posterior margin. Abdomen rounded, oval. Male genitalia with very long parameres.

Specimens	Host	Locality	Date	Collector
1 slide	*Charadrius semipalmatus*	Plymouth,Mass.	X-4-1923	BMS
1 slide	" "	Rye, NH	IX-24-1934	L.R.Nelson (USNM)

Saemundssonia scolopacisphaeopodis scolopacisphaeopodis (Schrank, 1803)

Pediculus scolopacis-phaeopodis Schrank, 1803. Fauna Boica: 191.
Docophorus humeralis Denny, 1842. Mon. Anopl. Brit.: 45 and 88, pl. 5, fig. 7.
Docophorus rotundus Rudow, 1869. Beitr. Kenntn. Malloph.: 11.
Philopterus armatus Johnston and Harrison, 1912. Trans. N. Z. Inst., 44: 370, figs. 7-10.
Docophorus viridicola Kellogg, 1914. Sci. Bull. Brooklyn Inst., 2: 82, pl. 16, fig. 2.
Saemundssonia humeralis americana Carriker, 1956. Florida Ent., 39: 31, figs. 24-25.
Type host: *Numenius phaeopus* (Linnaeus)--Whimbrel.

Head without emarginate hyaline margin. Prothorax with 1 long seta in each posterolateral angle; pterothorax with 18-24 long setae on the posterior margin and a lateral spine-like seta on each side. Two meso- and 2 metasternal setae on the sternal plate. Abdomen with tergal plate II entire; III-XI divided medially.

Peters (1936) reports this species from Florida, Massachusetts, and South Carolina.

Specimens	Host	Locality	Date	Collector
2♀, 1♂	*Numenius phaeopus*	Phippsburg, Me.	IX-9-1965	H.Tyler
2 slides	" "	Newbury, Mass.	IX-13-1921	A.B.Fuller (USNM)
1 slide	" "	Rye,NH	IX-9-1933	L.R.Nelson (USNM)

Measurements: *S. s. scolopacisphaeopodis* (Schrank, 1803)

	Male ♂	Female ♀
Head Length	.66	.73
Head Width	.69	.85
Pterothorax Width	.52	.61
Abdomen Length	.82	1.09
Total Length	1.87	2.25

Saemundssonia sternae (Linnaeus, 1758)

Pediculus sternae Linnaeus, 1758. Syst. Nat., ed. 10: 612.
Nirmus fornicatus Olfers, 1816. De Veget...: 89.
Docophorus 5-maculatus Piaget, 1885. Les Pediculines, Supplement: 9, pl. 1, fig. 10.
Type host: *Sterna hirundo* Linnaeus--Common Tern.
Other New England host:
Sterna dougallii Montagu--Roseate Tern.

Head with anterior hyaline margin flattened; dorsal anterior plate with anterior margin flattened or slightly concave, and projecting beyond point of fusion of internal and marginal bands. Pterothorax with 7-10 long setae on dorsal posterior margin, each side.

Abdomen ovoid with tergal plates of segment II approximate or in contact medially, and joined together by well marked secondary sclerotization.

Ward (1955) reports this species from Virginia, Ohio, Louisiana, Minnesota, and Georgia.

Specimens	Host	Locality	Date	Collector
2 ♂	*Sterna hirundo*	Greenland, NH	IX-2-1965	J.E.K.

Saemundssonia tringae (O. Fabricius, 1780)
Pediculus tringae O. Fabricius, 1780. Fauna Groenlandica: 219.
Docophorus canuti Denny, 1842. Mon. Anopl. Brit.: 44 and 84, pl. 3, fig. 5.
Docophorus fusiformis Denny, 1842. Mon. Anopl. Brit.: 44 and 84, pl. 1, fig. 2.
Docophorus variabilis Denny, 1842. Mon. Anopl. Brit.: 42 and 71, pl. 3, fig. 4.
Docophorus alpinus Giebel, 1874. Insecta Epizoa: 105.
Docophorus lari Grube, 1851 (*nec* O. Fabricius, 1780). Middendorff's sibir. Reise: 473.
Docophorus arcticus Mjöberg, 1910. Ark. Zool., 6: 122, fig. 69.
Saemundssonia grubi Eichler, 1942. Zool. Anz., 139: 31 (*nn* for *D. lari* Grube, 1851).
Type host: *Erolia maratima* (Brünnich)--Purple Sandpiper.
Other New England hosts:
Arenaria interpres (Linnaeus)--Ruddy Turnstone.
Calidris canutus (Linnaeus)--Knot.
Erolia melanotos (Vieillot)--Pectoral Sandpiper.
Erolia minutilla (Vieillot)--Least Sandpiper.
Erolia alpina (Linnaeus)--Dunlin.
Ereunetes pusillus (Linnaeus)--Semipalmated Sandpiper.
Crocethia alba (Pallas)--Sanderling.

Head with dorsal anterior plate markedly concave on anterior margin. Tergal plates of abdominal segment II joined medially in both sexes and the dorsal abdominal setae do not form a continuous line across each segment, occurring only along the posterior margins of the tergal plates. Male genitalia with a sclerotized cross-bar at the distal end of the basal plate; endomeral projections fused medially.

Measurements: *Saemundssonia tringae* (O. Fabricius, 1780).
(from Clay and Hopkins, 1954)

	♂	♀
Head Length	.55	.62
Head Width	.51	.59
Pterothorax Width	.38	.47
Abdomen Width	.65	.83
Total Length	1.47	1.67

Specimens	Host	Locality	Date	Collector
1 slide	*Erolia maratima*	New Hampshire	V-1-1933	L.R.Nelson (USNM)
1 slide	*Erolia alpina*	N.Eastham,Mass.	X-26-1930	H.S.Peters (USNM)
1 slide	" "	" " "	X-26-1930	K.C.Emerson
1 slide	" "	Rye, NH	X-2-1933	L.R.Nelson (USNM)
1 slide	*Ereunetes pusillus*	Seabrook, NH	IX-29-1936	USNM

Saemundssonia sp.

Collections of this undescribed species were made from the Thick-billed Mure, *Uria lomvia*.

Specimens	Host	Locality	Date	Collector
2 ♀, 1♂, 3 imm.	*Uria lomvia*	Kittery, Me.	I-26-1964	--
5 ♀, 1♂, 1 imm.	" "	Bar Harbor, Me.	I-24-1934	A.E.B.

STRIGIPHILUS

Strigiphilus Mjoberg, 1910. Ark. Zool., 6: 132.
Type species: *Docophorus heterocerus* Nitzsch, 1861 (*nec* Grube, 1851) (A synonym of *Strigiphilus goniodicerus* Eichler, 1949).
Eustrigiphilus Ewing, 1926. Proc. Ent. Soc. Wash., 28: 148.
Type species: *Philopterus ceblebrachys* (Denny, 1842).
Tytoniella Eichler, 1949a. Boll. Soc. Ent. Ital., 79: 13.
Type species: *Docophorus rostratus* Burmeister, 1838.

Head large; forehead irregularly rounded, with sides evenly rounded. Dorsal anterior plate undivided and extending anteriorly nearly to the front of the head; clypeal bands distinct, dark and extending to the margin of the head. Trabeculae reduced, not reaching tip of 1st antennal segment in the majority of described species. Temporal lobes rounded, slightly expanded laterally. Prothorax short; pterothorax broader than basal segment of the abdomen. Abdomen variable, broad and stout in many species, usually deeply pigmented with prominent spiracles and distinct pleural plates, the latter with serrate posterior borders. Genitalia of male with long basal plate, fused endomeres and short stubby free parameres. True penis absent. Members of this genus are parasitic upon birds of the order Strigiformes.

Strigiphilus acutifrons Emerson, 1961
Strigiphilus acutifrons Emerson, 1961. Proc. Biol. Soc. Wash. 74: 189, figs. 2 and 10.
Type host: *Bubo virginianus* (Gmelin)--Great Horned Owl.

Head longer than wide with narrow, long dorsal anterior plate bearing a caudally pointed projection and 2 angled projections on either side of the midline. Genital plate of male narrow and elongated with 2 long setae centrally in the anterior portion. Genital plate of female rectangular in shape with sparsely scattered small setae. Terminal abdominal segment of female bilobed.

Measurements: *Strigiphilus acutifrons* Emerson, 1961 (from Emerson, 1961)

	♂	♀
Head Length	.65	.70
Head Width	.57	.62
Prothorax Width	.34	.38
Pterothorax Width	.51	.56
Abdomen Width	.82	.90
Total Length	1.88	2.15

Specimens	Host	Locality	Date	Collector
3 ♀, 3 ♂	*Bubo virginianus*	Lincoln, Me.	Jan.-June,1941	W.J.Clayton

Strigiphilus barbatus (Osborn, 1902)
Docophorus barbatus Osborn, 1902. Ohio Nat., 2: 201, pl. 14, fig. 1.
Neodocophorus asionis Eichler, 1949. Beitr. Tax. Zool., 1: 12, pl. 1, figs. 1-12.
Type host: *Asio otus* (Linnaeus)--Long-eared Owl.

Head narrowed in front of antennae, the margin slightly concave; dorsal anterior plate long, narrow posteriorly; antennae small, similar in the 2 sexes. Prothorax quadrate with anterior angles rounded and posterior angles nearly rectangular; posterior margin slightly convex, with 1 long seta in each posterolateral angle. Abdomen elongate-oval.

Osborn described this species from the Rusty Blackbird collected in Nebraska. The host designation was in error as indicated by Emerson (1955b) who examined cotypes of this species which agrees with other material taken from *Asio otus*.

Strigiphilus ceblebrachys (Denny, 1842)
Pediculus strigis O. Fabricius, 1780 (*nec* Pontoppida, 1763). Fauna Groenlandica: 216.
Docophorus ceblebrachys Denny, 1842. Mon. Anopl. Brit.: 45 and 92, pl. 1, fig. 3.
Type host: *Nyctea scandiaca* (Linnaeus)--Snowy Owl.

Head wider than long, flatly rounded in front. Dorsal anterior plate short and broad, wider than long, pointed posteriorly; eye with long seta arising dorsally; temporal carina darkly pigmented. Prothorax small, with a single long seta on each lateral margin; prosternal plate with 2 long setae. Pterothorax with 16 long setae on the posterior margin. Abdomen robust, with well marked pleural plates.

This is a common mallophagan on the Snowy Owl which has been reported from many localities; Wilson (1928) New York; Peters (1928) Ohio; Peters (1936) Maine and New Hampshire; Procter (1938) Maine; Brimley (1939) North Carolina; Emerson (1940) Oklahoma; Brown and Wilk (1944) Alberta; Stirrett (1952) and Judd (1953) Ontario; and Whitehead (1954) Quebec.

Specimens	Host	Locality	Date	Collector
665	*Nyctea scandiaca*	Seabrook, NH	XI-6-1964	R.Gilmore
1 slide	" "	Branford, Conn.	--	Cornell Coll.
1 slide	" "	" "	XI-14-1937	A.H.Armstrong (MCZ)
9 slides	" "	Middletown,Conn.	--	W.N.Rice (USNM)
1 slide	" "	Brunswick, Me.	XI-12-1926	A.O.Gross (USNM)
1 slide	" "	Lincoln, Me.	XI-16-1937	A.E.B.
1 slide	" "	" "	XI-27-1937	A.E.B.
1 slide	" "	" "	XII-7-1937	A.E.B.
1 slide	" "	" "	X-14-1941	A.E.B.
1 slide	" "	Scituate,Mass.	XI-12-1926	J.B.May (BMS)
1 slide	" "	Hinsdale, NH	II-19-1939	L.R.Nelson (USNM)
1 slide	" "	Little Compton, RI	--	Cornell Coll.

The 665 *S. ceblebrachys* was the largest number of Mallophaga taken from a single bird during the course of this study.

Measurements: *Strigiphilus ceblebrachys* (Denny, 1842)

	♂	♀
Head Length	.57	.63
Head Width	.64	.73
Prothorax Width	.36	.42
Pterothorax Width	.52	.63
Abdomen Length	.96	1.20
Abdomen Width	.88	.94
Total Length	1.84	2.20

Strigiphilus cursor (Burmeister, 1838)

Docophorus cursor Burmeister, 1838. Handb. Ent., 2: 426.

Nirmus brachyoti Denny, 1852. List Brit. Animals in Brit. Mus., pt. II, Anoplura: 13 (*nn* for *D. cursor* Burmeister, 1838).

Nirmus stridulae Denny, 1852. List Brit. Animals in Brit. Mus., pt. II, Anoplura: 13 (*nn* for *D. cursor* Burmeister, 1838).

Docophorus nudipes Piaget, 1880. Les Pediculines: 26, pl. 1, fig. 6.

Type host: *Asio flammeus* (Pontoppidan)--Short-eared Owl.

I do not have any information concerning this species of Mallophaga.

Specimens	Host	Locality	Date	Collector
1 slide	*Asio flammeus*	Middletown, Conn.	XI-15-1925	O.L.Austin,Jr. (USNM)

A specimen of *S. cursor* (Burmeister, 1838).

Strigiphilus oculatus (Rudow, 1870)
Nirmus oculatus Rudow, 1870. Z. ges. NatWiss., 35: 465.
Docophorus bubonis Osborn, 1896. Bull. U. S. Bur. Ent. (n. s.), 5: 219.
Type host: *Bubo virginianus* (Gmelin)--Great Horned Owl.

Head wider than *S. acutifrons* Emerson, 1961, with wide, stout dorsal anterior plate, pointed posteriorally. Temporal lobe with 2 setae. Abdominal chaetotaxy is less dense in *S. oculatus* than in *S. acutifrons*. Male genital plate triangular-shaped with the widest portion anterior. The male genitalia are similar but smaller in *S. cursor*.

Specimens	Host	Locality	Date	Collector
1 slide	*Bubo virginianus*	Wenham, Mass.	X-9-1938	USNM
1 slide	" "	" "	X-9-1938	BMS

Strigiphilus otus Emerson, 1955b
Strigiphilus otus Emerson, 1955b. Proc. Ent. Soc. Wash., 57: 241, figs. 1-2.
Type host: *Otus asio* (Linnaeus)--Screech Owl.

Dorsal anterior plate with anterior margin indented and sharply pointed posteriorly. Hyaline margin wide. Prominent dorsal antennal sutures mid-way between antennae and the hyaline margin, each extending inward 1/3 width of head. Temples convexly rounded, each with 2 long setae; posterior margin of head bare. Prothorax with 1 long seta on each posterolateral angle. Pterothorax 1/3 as long as wide with 6 long median setae dorsally on the posterior margin, and 3 long setae on the posterolateral angles. Male and female approximately the same size.

Emerson (1955b) records this species from Arizona, Texas, New York, Maryland, Oregon, and British Columbia.

Strigiphilus varius Carriker, 1958
Strigiphilus varius Carriker, 1958. Proc. Ent. Soc. Wash., 60: 169, figs. 3-4.
Type host: *Strix varia* Barton--Barred Owl.

Head longer than wide with premarginal carinae submarginal posterior to the clypeal suture; lateral margins of head, anterior to the antennae are undulating. Prothorax wider than long with a long seta in each posterolateral angle; pterothorax with 8 long setae centrally on the dorsal posterior margin. Abdomen with narrow pleurites.

Carriker (1958) reports this species from Indiana.

Measurements: *Strigiphilus varius* Carriker, 1958

	♂	♀
Head Length	.50	.55
Head Width	.45	.49
Prothorax Width	.28	.30
Pterothorax Width	.45	.46
Abdomen Length	.89	1.23
Abdomen Width	.60	.70
Total Length	1.71	1.78

Specimens	Host	Locality	Date	Collector
1 slide	*Strix varia*	Torrington, Conn.	III-17-1937	P.Wallace
1 slide	" "	Maine	V-1-1895	F.B.Webster (USNM)
1 slide	" "	Acadia Nat'l Park,Me.	XI-21-1935	A.E.B.
1 slide	" "	Trenton, Me.	XI-15-1934	A.E.B.
♀, ♂	" "	Durham, NH	II-21-1966	G.Byers
♀, ♂	" "	Northwood, NH	X-11-1965	A.H.Mason

STURNIDOECUS

Sturnidoecus Eichler, 1944. Stettin. Ent. Ztg., 105: 81.
Type species: *Docophorus leontodon* Nitzsch, 1818 (A synonym of *Pediculus sturni* Schrank, 1776).

Philopteridae with rather elongate, bluntly triangular head; clypeus rather narrow, truncate or slightly concave; clypeal signature distinct, broadly emarginate anteriorly, truncate posteriorly. Eyes protruding, with a short seta. Temporal lobes rounded, with a long seta at each posterolateral angle and 2 or 3 small setae along the dorsal margin between the temporal angle and eye. Posterior edge of occiput nearly straight, with no setae; occipital carinae distinct; antennae similar in the 2 sexes, 2nd segment the longest, 1st and 5th of about equal length. Prothorax rectangular with a long setae near each posterolateral angle; pterothorax nearly as wide as head; sides divergent posteriorly. Abdomen elongate-oval in outline; abdomen of female more elongate than in male. Last abdominal segment of male slightly bilobed and abdominal setae sparse or absent. Male genitalia with broad basal plate; parameres club-shaped basally, narrowing in mid-portion with tips expanded and curving inward.

Sturnidoecus simplex (Kellogg, 1896)
Nirmus simplex Kellogg, 1896. Proc. Calif. Acad. Sci., 6: 492, pl. 67, fig. 2.
Philopterus migratorii Peters, 1935. Proc. Ent. Soc. Wash., 37: 146, figs. 1-2.
Type host: *Turdus migratorius* Linnaeus--Robin.

Superficially like *Philopterus*, but the presence of an emarginate dorsal anterior plate places this mallophagan in the genus *Sturnidoecus*. Peters (1935) reports this species from Ohio, Delaware, Massachusetts, Florida, North Carolina and Virginia. Peters (1936), in addition to the above localities, reports this species from South Carolina.

Measurements: *Sturnidoecus simplex* (Kellogg, 1896)
(from Peters, 1935)

	♂	♀
Head Length	.48	.51
Head Width	.45	.49
Thorax Length	.26	.30
Thorax Width	.41	.44
Abdomen Length	.75	.99
Abdomen Width	.64	.68
Total Length	1.49	1.80

Specimens	Host	Locality	Date	Collector
4 ♀, 1 ♂	*Turdus migratorius*	Bar Harbor, Me.	VI-1-1938	A.E.B.
1 slide	" "	Groton, Mass.	VI-9-1938	A.P.Wharton (USNM)
1 ♀	" "	Durham, NH	IV-19-1948	E.O.Hooghkirk
11♀ , 2 ♂	" "	Plaistow, NH	IV-23-1965	J.E.K.

Sturnidoecus sturni (Schrank, 1776)

Pediculus sturni Schrank, 1776. Beytr. Naturgesch.: 118, pl. 5, figs. 11-14.

Philopterus leotondon Nitzsch, 1818. Germar's Mag. Ent., 3: 290 (*nn* for *P. sturni* Schrank, 1776).

Docophorus ostralegi Denny, 1842. Mon. Anopl. Brit.: 42 and 74, pl. 5, fig. 4.

Type host: *Sturnus vulgaris* Linnaeus--Starling.

I have examined 59 Starlings from various localities in New England without finding this species of Mallophaga. I have no information concerning *S. sturni* and could find no records of its occurrence in New England. It appears to be uncommon on the Starling.

PERCENTAGE INFESTATION OF NEW ENGLAND BIRDS BY MALLOPHAGA

ORDER	INDIVIDUALS EXAMINED	INDIVIDUALS PARASITIZED	PERCENTAGE INFESTATION
GAVIIFORMES	4	1	25.0
PODICIPEDIFORMES	4	1	25.0
PROCELLARIIFORMES	7	6	85.7
PELECANIFORMES	6	6	100.0
CICONIIFORMES	10	3	30.0
ANSERIFORMES	120	84	70.0
FALCONIFORMES	40	31	77.5
GALLIFORMES	35	19	54.2
GRUIFORMES	7	3	42.8
CHARADRIIFORMES	176	109	61.9
COLUMBIFORMES	20	12	60.0
CUCULIFORMES	5	3	60.0
STRIGIFORMES	41	34	82.9
CAPRIMULGIFORMES	2	0	00.0
APODIFORMES	13	7	53.8
CORACIIFORMES	3	2	66.6
PICIFORMES	24	12	50.0
PASSERIFORMES	585	220	37.6
TOTALS	1,102	553	50.1

This percentage infestation agrees quite closely with the results obtained by Geist (1935) who, over a 5 year period, collected 1,025 birds, 470 were infested with Mallophaga giving a percentage infestation of 46.0.

HOST-MALLOPHAGA INDEX OF GENERA FOUND IN NEW ENGLAND

GAVIIFORMES

Genus *Craspedonirmus* (Found only on this order).

PODICIPEDIFORMES

Genus *Aquanirmus* (Found only on this order).
Genus *Laemobothrion*
Genus *Pseudomenopon*

PELECANIFORMES

Genus *Eidmaniella* (Found only on this order).
Genus *Pectinopygus* (Found only on this order).
Genus *Piagetiella* (Found only on this order in the throat pouch).

CICONIIFORMES

Genus *Ardeicola* (Found only on this order and rarely collected).
Genus *Ciconiphilus*

ANSERIFORMES

Genus *Acidoproctus* (Found only on this order and rarely collected).
Genus *Anaticola* (Found only on this order).
Genus *Anatoecus* (Found only on this order).
Genus *Ciconiphilus*
Genus *Holomenopon* (Found only on this order).
Genus *Ornithobius* (Found only on swans, geese, and brants).
Genus *Trinoton* (Found only on this order).

FALCONIFORMES

Genus *Colpocephalum*
Genus *Craspedorrhynchus* (Only on the family Accipiteridae).
Genus *Cuculiphilus*
Genus *Degeeriella* (Found only on this order).
Genus *Falcolipeurus* (Found only on this order).
Genus *Kurodaia*
Genus *Laemobothrion*

GALLIFORMES

Genus *Amyrsidea* (Found only on this order).
Genus *Chelopistes* (Found only on the turkey in New England).
Genus *Cuclotogaster* (Found only on the chicken in New England).
Genus *Goniocotes* (Found only on this order).
Genus *Goniodes* (Found only on this order).
Genus *Lagopoecus* (Found only on this order).
Genus *Lipeurus* (Found only on this order).
Genus *Menacanthus*
Genus *Menopon* (Found only on the chicken in New England).
Genus *Oxylipeurus* (Found only on this order).

GRUIFORMES

Genus *Fulicoffula* (Found only on this order).
Genus *Incidifrons* (Found only on this order).
Genus *Laemobothrion*
Genus *Pseudomenopon*
Genus *Rallicola* (Found only on this order).

CHARADRIIFORMES

Genus *Actornithophilus* (Found only on this order).
Genus *Austromenopon*
Genus *Carduiceps* (Found only on the family Scolopacidae).
Genus *Cummingsiella* (Found only on the family Scolopacidae).
Genus *Lunaceps* (Found only on this order).
Genus *Quadraceps*
Genus *Rhynonirmus* (Found only on the family Scolopacidae).
Genus *Rotundiceps* (Found only on the Marbled Godwit).
Genus *Saemundssonia*

COLUMBIFORMES

Genus *Bonomiella* (Found only on this order and very rare).
Genus *Campanulotes* (Found only on this order).
Genus *Colpocephalum*
Genus *Columbicola* (Found only on this order).
Genus *Hohorstiella* (Found only on this order and uncommon).
Genus *Physconelloides* (Found only on this order).

CAPRIMULGIFORMES

Genus *Mulcticola* (Found only on the family Caprimulgidae).

CUCULIFORMES

Genus *Cuculicola* (Found only on this order).
Genus *Cuculiphilus*
Genus *Cuculoecus* (Found only on this order).

STRIGIFORMES

Genus *Colpocephalum*
Genus *Kurodaia*
Genus *Strigiphilus* (Found only on this order).

APODIFORMES

Genus *Dennyus* (Found only on the family Apodidae).
Genus *Eureum* (Found only on the family Apodidae and very rare).
Genus *Trochiloecetes* (Found only on the family Trochilidae).

CORACIIFORMES

Genus *Quadraceps*

PICIFORMES

Genus *Brüelia*
Genus *Menacanthus*
Genus *Penenirmus*
Genus *Picicola*

PASSERIFORMES

Genus *Brüelia*
Genus *Colpocephalum* (Found only on the family Corvidae).
Genus *Machaerilaemus* (Found only on this order and uncommon).
Genus *Menacanthus*
Genus *Myrsidea* (Found only on this order).
Genus *Penenirmus*
Genus *Philopterus* (Found only on this order in New England).
Genus *Picicola*
Genus *Ricinus* (Found only on this order in New England).
Genus *Sturnidoecus* (Found only on this order).

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